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DIVERSITY • DIGNITY • DRIVE

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PREFACE

2025 marks sixty years of Singapore's independence. Against the odds, we have transformed from a developing economy into a global powerhouse. The story of Singapore's remarkable success is, without a doubt, a story of labour. Labour has been the foundation upon which a city-state without natural resources anchored its place in the world. Labour remains the engine that powers innovation, builds communities, and expands opportunities for all. As we celebrate this milestone, it is timely to take stock of our progress and chart our path forward, together.

Today, the nature of work, workplaces, and the demographics of our workforce have changed. Disruptive technologies like artificial intelligence, geopolitical conflicts, and the climate crisis have accelerated job instability, career moves, and re-skilling as the norm rather than an exception. An ageing population and slowing workforce growth, as well as longer and healthier life expectancies, lead to a longer work life. To prepare our workforce for an increasingly complex and turbulent landscape, the Labour Movement will need to strategically identify in-demand skills and assess existing employment policies to better support workers' aspirations and enhance their well-being.

To this end, the Singapore National Trades Union Congress (NTUC) has intensified our efforts in research and innovation. During the 2024 Labour Research Conference, we launched the Labour Alliance co-laB (LAB) initiative, a first-of-its-kind labour research alliance in Southeast Asia that aims to foster close and meaningful partnerships between the Labour Movement and experts in labour research and innovation through an ecosystem approach. As of today, LAB has amassed over 50 local and global members to impact policy, practice, and discourse.

The *Singapore Labour Journal* is another space where we hope to amplify voices and strengthen our advocacy efforts. Each article in this fourth volume is an embodiment of the theme: "Diversity · Dignity · Drive", underscoring the Labour Movement's commitment to building a workforce where every individual is valued. Together, the articles in this collection spotlight inclusive practices, progressive workplaces, and the drive towards a more representative Labour Movement, lifelong growth, career resilience, and workforce transformation. In this edition, we share pressing labour trends and issues such as job burnout and portfolio careers, as well as thought-provoking ideas such as a Career Progression Model to revitalise the skilled trades sector, and actionable strategies for fostering inclusive workplace climates.

The *Journal* remains unique in our open and inclusive practice of bringing together academics from diverse disciplines, policymakers, and practitioners together in conversation. Guided by the union tradition of advocacy, documenting, and questioning, as well as wide relational networks, NTUC is well placed to take on the work of assembling knowledge and curating discourse among allies pursuing social justice and economic fairness. This edition includes practitioner perspectives on the progress of the NTUC Job Security Council and the strategic professionalisation of Singapore's public bus driving industry. It also features the concept of Career Health as a strategy to optimise human capital.

I am hopeful that the *Journal* will contribute to sharing best practices and provoking critical reflection and dialogue in Singapore and beyond. I want to thank our Advisory and Editorial Board members for their expertise and support, as well as our contributors and reviewers for entrusting us with their work.

Thank you for taking the time to engage with the voices, stories, and ideas within these pages. I hope that as you read the collection of articles within, the perspectives shared will offer you inspiration and encourage continued efforts to support and uplift the lives and livelihoods of workers in meaningful ways.

Happy reading!

Patrick Tay
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General Editor of the Singapore Labour Journal
National Trades Union Congress, Singapore

RESEARCH ARTICLES

Motivations and Barriers to Lifelong Learning in Singapore: Evidence From Focus Group Discussions

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Abstract

Lifelong learning is recognised as essential given rapid technological developments and is supported by government policy in Singapore through SkillsFuture. However, take-up rates of SkillsFuture-supported training remain modest. We conducted a mixed methods study on SkillsFuture-eligible Singaporean workers (n = 53), with and without recent SkillsFuture-sponsored training experiences, that combined focus group discussions on lifelong learning decision-making with surveys measuring extrinsic and intrinsic learning motivations. Workers generally appreciated that lifelong learning provided extrinsic benefits in career and skills development, although many faced practical barriers such as time and cost constraints. When making cost-benefit decisions on training, workers faced incomplete or unclear information on course quality, learning outcomes, and career prospects. While learners were also intrinsically motivated by personal growth and fulfilment, they were discouraged by psychological barriers such as low self-confidence, particularly when considering course assessments. Both intrinsic and extrinsic motivations played a strong complementary role in training take-up, but barriers could prevent workers from acting on their motivations. To improve lifelong learning take-up, we recommend lowering practical barriers to training by further addressing cost and time constraints. Curating high-quality information on course quality and prospects, supported by career or skills coaching, will help with choice. Psychological barriers may be reduced by minimising stressors such as assessments, while supporting personal fulfilment-based training may create spillovers for career-oriented training, given the complementarity between both motivations. Developing a self-directed learning mindset from young, while encouraging adults with behavioural nudges, may help bridge the gap between training intention and action.

Introduction

Lifelong learning has become essential for workers to adapt their skills and knowledge amid technological advancements, economic uncertainties, and the rise of new industries. Launched in 2015, Singapore's SkillsFuture national movement aims to empower Singaporeans to take charge of their lifelong learning for both personal fulfilment and career development (Lim et al., 2024; Tan, 2017). SkillsFuture offers training subsidies, including personal SkillsFuture Credit accounts, which help offset course fees. However, in 2022, only about one in two Singaporeans had used their SkillsFuture Credits, highlighting significant room to boost participation (Lee, 2024).

Policies and prior studies on training uptake have mainly addressed practical barriers such as time constraints, financial limitations, and concerns about training quality (Kim et al., 2021). However, it is crucial to understand the deeper motivations and challenges individuals face when deciding to pursue skills training—especially since adult learning is often self-directed (Loeng, 2020). This study explores how Singaporean workers make decisions on adult learning, examining access and use of information, underlying beliefs, trade-offs, and both intrinsic and extrinsic motivations. We focus on the following questions:

- How do individuals decide whether to participate in adult training?
- What are the intrinsic and extrinsic motivations and barriers influencing adult learners' decisions to engage in further education?

To address these questions, we employ a mixed methods approach that combines qualitative focus group discussions (FGDs), which capture the nuanced experiences and thought processes of adult learners, with quantitative data from post-session surveys measuring learning motivations. Beyond practical or extrinsic motivations, we also explore the psychological and emotional aspects of adult learning by examining intrinsic motivations for continuous learning, as well as mental stresses that may hinder participation.

Our findings are organised around several key themes that explore how the decision to pursue adult learning is influenced by a complex interplay of extrinsic and intrinsic motivations, along with various challenges. The first theme focuses on how adults approach learning opportunities based on extrinsic motivation, weighing expected costs and benefits based on the information available.

Extrinsic motivation—driven by the desire for external rewards—plays a significant role in shaping adult learning choices. Prior studies have identified factors such as social recognition, financial incentives, job security, career advancement, and salary considerations as key drivers of adult learning participation (e.g. Boeren et al., 2012; Riddell et al., 2012; Rothes et al., 2014). Bélanger (2011) and Gorges and Kandler (2012) further emphasised that the expectation of success and the perceived value of learning strongly influence adults' motivation to enrol in courses or educational programmes.

Our study highlights that adults often weigh potential extrinsic benefits, like career advancement, against the time and financial costs involved. Consistent with previous research, time scarcity remains one of the primary barriers deterring adults from pursuing further education (Kyndt & Baert, 2013).

The second theme highlights the challenges adults face in evaluating the costs and benefits of learning due to incomplete or unclear information about course quality, learning outcomes, and job prospects. This lack of information often leads to inaction. Potential learners may opt out of training simply because they do not know where to find suitable programmes or how to use government-provided or union-provided training subsidies or benefits. Others hesitate due to uncertainty about course quality or doubts about the tangible benefits of participating in training.

The third theme focuses on the intrinsic motivations and concerns influencing adults' decisions about lifelong learning. Intrinsic motivation, which refers to the desire to engage in activities for personal satisfaction and interest, is closely associated with personal growth, self-fulfilment, and the pursuit of knowledge. Studies showed that adult learners driven by intrinsic motivation often achieve better academic outcomes and are more likely to pursue continuous

learning (e.g. Lee & Pang, 2013; McCombs, 1991). This perspective aligns with Self-Determination Theory, which suggests that intrinsic psychological needs drive individuals to participate in learning activities (Cook & Artino, 2016). Consistent with prior research, we find many are driven by personal fulfilment, intellectual stimulation, and the joy of exploring subjects that interest them. However, these positive motivations are often undermined by psychological barriers, such as low self-confidence and fear of assessments, which discourage participation (Goto & Martin, 2009).

The fourth theme examines the interplay between intrinsic and extrinsic motivations. While extrinsic motivation, such as monetary support for adult learning, drives immediate behavioural change, it may also crowd out intrinsic motivation by harming a worker's sense of competence and self-determination. If so, persistence in, and take-up rates of, adult learning may fall, once the external inducements are withdrawn (Deci et al., 1999). However, there is debate on whether indirect extrinsic motivations—such as improved career prospects—can empower and build self-confidence, and hence actually complement intrinsic motivation (Bénabou & Tirole, 2003; Cerasoli et al., 2014). We found that our participants exhibited strong complementarity and correlation between intrinsic and extrinsic motivations. Moreover, high combined motivations were positively associated with SkillsFuture take-up. However, even highly motivated participants often encountered practical barriers which prevented them from acting on their motivations to take up training.

We proceed by outlining the methods and sample, describe the survey measures of intrinsic and extrinsic motivations, establish the key themes and supporting evidence, discuss the main findings, and conclude with policy recommendations.

Methodology

Participant Recruitment and Demographics

Participants were recruited in early 2024 from public research recruitment channels, including social media and Telegram distribution lists. Participants were required to be Singapore Citizens or Permanent Residents aged 26–65 in the labour force. The inclusion criteria follow our study's focus on workers who (i) are eligible for SkillsFuture support (Singapore Citizens and Permanent Residents); (ii) completed their full-time education and who have working experience (minimum age of 26); and (iii) are still in the labour force (maximum age of 65).

Potential participants who responded to our recruitment were directed to an online screening questionnaire. The first part of the questionnaire conducted basic screening on the inclusion criteria; 684 potential participants were retained. The second part of the questionnaire collected data on age, employment status (Employed, n = 544; Self-Employed, n = 140), and whether they had participated in SkillsFuture courses (Participation in SkillsFuture Courses, n = 424; Participation in Non-SkillsFuture Courses Only, n = 142; or No Course Participation, n = 118).[1] We did not record any data on respondents who were screened out of the study.

We had two objectives in organising the FGD groups. First, we grouped participants by the combination of their Employment/Self-Employment status, SkillsFuture Course Participation status, and Non-SkillsFuture Course Participation status. This facilitated deeper exploration of the FGD themes, as grouped participants would be able to interact and draw on shared experiences.

[1] Participation in SkillsFuture Courses includes those who may have also participated in Non-SkillsFuture Courses, which we do not further differentiate.

Second, within and across FGD groups, we ensured that a broad range of different profile types (by age,[2] gender,[3] employment status, and SkillsFuture experience) were represented. This reflected the different profiles found in our adult workforce. However, we did not aim for statistical representativeness of the national distribution of adult workers, as this was precluded by our small sample size and use of qualitative methods.

To achieve both objectives, we implemented a quota sampling strategy based on profile type. We asked potential participants, grouped by employment and SkillsFuture/Non-SkillsFuture Course experience, to indicate FGD time slot availability. We then chose an FGD time slot with good participant availability and invited registrations. During registration, we tracked participant profile type based on age group (below/above 45 years old) and gender, and closed registration for that profile type once our quota was reached. For each FGD group, we registered up to 12 participants, but after no-shows/cancellations, we had the final group sizes of six to eight participants. In total, we had 53 participants distributed across seven FGD groups: (i) Employment + SkillsFuture Participation + Other Courses; (ii) Employment + SkillsFuture Participation + No Other Courses; (iii) Employment + No SkillsFuture Participation + Other Courses (two groups); (iv) Employment + No SkillsFuture Participation + No Other Courses (two groups); and (v) Self-Employment + SkillsFuture Participation + Other Courses. We did not run any FGD with Self-Employed workers and No SkillsFuture Participation as we did not recruit sufficient potential participants in this combined category.

Figure 1 shows the detailed demographics of the participants. As explained above, our gender, age distribution, SkillsFuture participation, and employment status were quota sampled purposefully to represent different profile types in the population. We wanted more Self-Employed respondents, but insufficient numbers were recruited to form another FGD session.[4] We did not quota sample based on education and income, as the data were only collected in the post-FGD survey. Compared to the population, our sample was highly educated but also had slightly lower household income. About 77% of our sample had a university qualification or higher, compared to 40% of the Singapore population aged 25–64.[5] As for income, 59% of our sample reported a monthly household income of below $10,000 in Singapore dollars, as compared to the Singapore median monthly household income of $11,427 in Singapore dollars.[6] This may reflect the difficulty of recruiting higher-income earners for a time-intensive FGD. Overall, while our sample is significantly more educated than the general population, our findings are relevant for understanding lifelong learning behaviours in Singapore's highly professionalised and educated workforce—where 64% are now classified as Professionals, Managers, Executives, and Technicians.[7]

[2] Due to the higher proportion of younger workers in the potential participant population, we had to accept a larger portion of participants aged 26–30 in the final sample. See Figure 1.

[3] Whilst we did not ask for gender in our screener, as potential participants provided their name, we attempted to distribute our recruitment invitations based on assumed gender from names. We subsequently confirmed gender in the post-FGD survey.

[4] Although we had 140 Self-Employed potential participants registering interest in the study, getting participants to commit to the same time slot for an FGD was challenging, and even among the participants who agreed to a time slot, some cancelled/no-showed. Thus, our assessment was that holding another FGD with Self-Employed workers was not feasible with the limited participant pool.

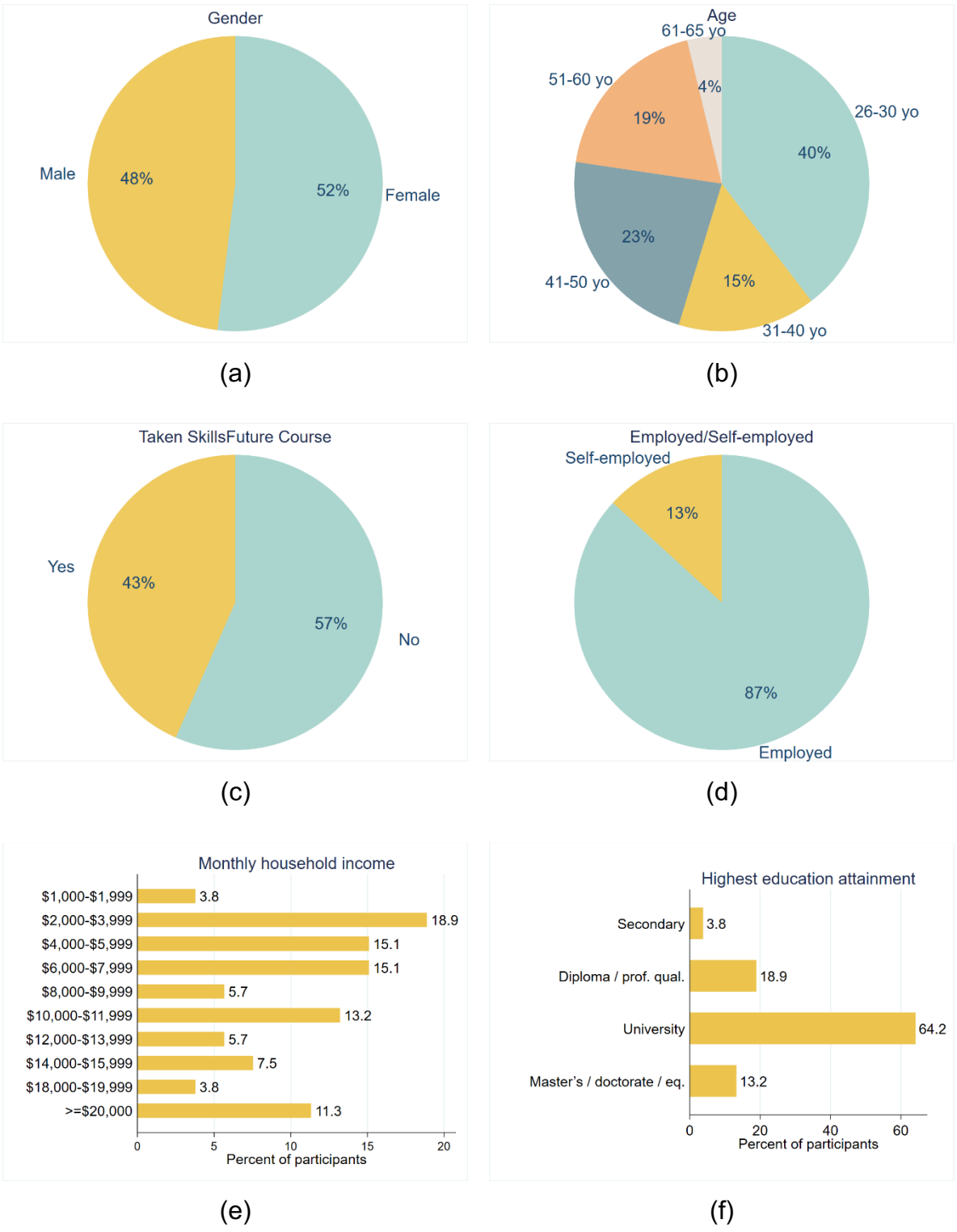
[5] Authors' calculation based on Table 24, Resident Population Aged 15 Years and Over by Age Group, Highest Qualification Attained, Sex and Ethnic Group, Census of Population 2020, Department of Statistics, Singapore.

[6] Sourced from Median Monthly Household Employment Income Including Employer CPF Contributions (Dollar) in 2024, Key Indicators on Household Employment Income among Resident Employed Households, Annual, Department of Statistics, Singapore.

[7] Sourced from Highlights, Labour Force in Singapore 2024, Ministry of Manpower, Singapore.

Figure 1

Participants' Demographics



Note. Figures may not sum up to 100% due to rounding.

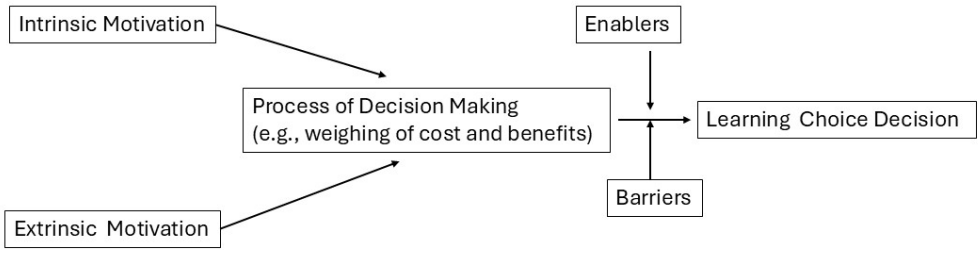
Focus Group Discussion Methods

The discussions were guided by a semistructured protocol that explored experiences, motivations, barriers, decision-making processes, and learning preferences. We developed the protocol starting with Ryan and Deci's (2000a) Self-Determination Theory, hypothesising that both intrinsic and extrinsic motivators influence participants' learning choices. We assume,

following Rational Choice Theory, that participants weigh the perceived costs and benefits in making their choice of whether and which adult learning course to pursue. Based on a review of the adult learning literature (earlier described), we hypothesised that enablers like organisational support, or barriers such as lack of time, also impact the decision-making process and outcome. See Figure 2 for our framework of the adult learner's decision-making process.

Figure 2

Adult Learner's Decision-Making Process



To uncover how intrinsic and extrinsic motivations influence adult learning decisions, we structured the FGD questions by first asking about participants' motivations (and demotivators) to take SkillsFuture and other courses (or not take courses). We asked participants to share experiences based on their decision-making process, as well as what they wished would have happened. We followed up with questions on enablers and barriers to taking courses. We also sought to understand ideal situations and contexts that would enable participants to take SkillsFuture Courses. In framing our questions, we strove to be open-ended and broad so as not to lead participants in any direction. We tested the FGD questions in a pilot session to check and refine them for overall flow. The FGD guide is included in Appendices A and B.

Each session was conducted online via Zoom, lasted around 90 min, and participants were reimbursed in cash of $150 in Singapore dollars for their time. The sessions were transcribed automatically and checked manually for accuracy by a research assistant. The transcripts were then imported into NVivo software for thematic analysis.

After the FGD sessions, participants were asked to complete an online questionnaire capturing their demographic variables and background information (e.g. age, gender, and income), and answered scale measures (described below) of intrinsic and extrinsic motivations to learn. All scale measures were scored using the Likert 5-point scale, from 1 (strongly disagree) to 5 (strongly agree).

Survey Measures: Extrinsic Motivation

Our measure of extrinsic motivation is based on the Value/Usefulness subscale of the Intrinsic Motivation Inventory (IMI), developed by Ryan and Deci (2000b) to assess several dimensions of people's subjective experiences in an activity. The Value/Usefulness subscale captures respondents' perceived value of learning. It measures extrinsic motivation as it asks about the external benefits of an activity, such as achieving goals, rather than about the inherent enjoyment of the activity itself (Ryan & Deci, 2000b). Participants were asked the extent to which they agreed with the following statements:

- "I believe that learning new skills could be of some value to me."
- "I think that doing this activity is useful for my job."
- "I think that learning new skills for work is important."

Survey Measures: Intrinsic Motivation

Our first survey measure of intrinsic motivation in learning used three items from the Motivation-to-Learn scale (Gorges et al., 2016), that was adapted from the background questionnaire of the Programme for the International Assessment of Adult Competencies. Participants were asked to rate how much they agreed with the following statements:

- "I like to get to the bottom of difficult things."
- "I like to figure out how different ideas fit together."
- "If I don't understand something, I look for additional information to make it clearer."

The second measure of intrinsic motivation contained three items drawn from a subscale of the IMI (Ryan & Deci, 2000b). We adopted the Interest/Enjoyment subscale as it is considered a measure of intrinsic motivation, and we framed the statements to the specific activity of learning. The three statements were as follows:

- "I enjoy learning very much."
- "Learning is fun to do."
- "I would describe learning new things as very interesting."

Results

Overview—Discussion Themes

To generate the set of themes relevant to our FGDs, we conducted an iterative first-level open-coding process following Braun and Clarke (2006). Two coders, including an author of this paper and a research assistant, independently reviewed all FGD transcripts and finalised the coding guide.

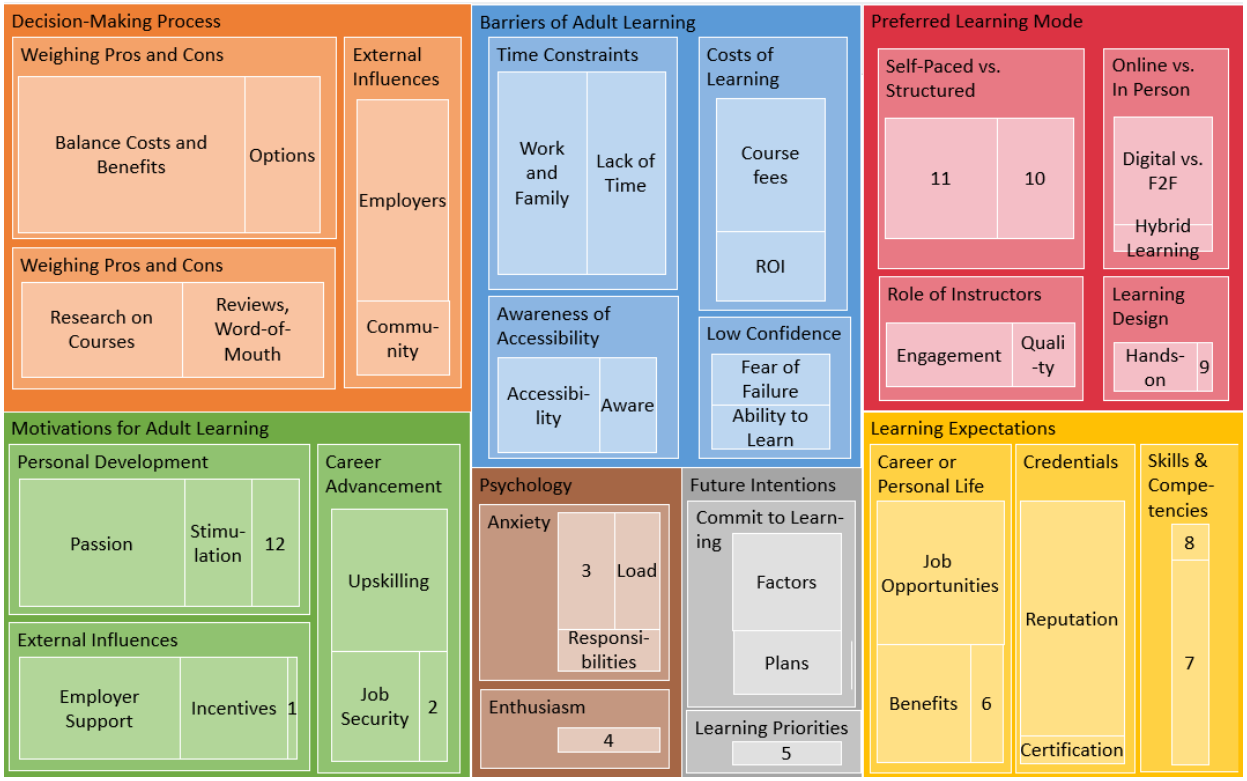
The first steps in the thematic analysis were to become familiar with the data and begin identifying initial themes to describe the developmental experiences of participants (Braun & Clarke, 2006). As such, a research assistant thoroughly reviewed all FGD transcripts independently and then discussed the initial themes with the first author. During the discussion, there was a focus on identifying (a) motivations and barriers and (b) decision-making processes. Results from this phase of thematic analysis resulted in the identification of all the themes depicted in the treemap in Figure 3.

Using these themes as the coding guide, the FGD transcripts were coded by the research assistant and the coding was confirmed by the first author. NVivo software was used in the coding process. The coding guide had seven higher-order categories reflecting the (a) decision-making process, (b) motivations for adult learning, (c) barriers of adult learning, (d) learning expectations, (e) preferred learning modes, (f) future intentions, and (g) psychology around making lifelong learning decisions. The research assistant's coding was verified by the first author, who checked if the child codes (i.e. subthemes) related to the quotes were highlighted in the coding. The size of the rectangles in Figure 3 corresponds to the number of items coded within each theme.

The results of coding reveal that the main decision-making process of participants was balancing costs and benefits in considering options and alternatives. Under the broad theme of motivations for adult learning, two key themes emerged: (a) personal interest and (b) desire to upskill. As for barriers to learning, the two key themes discussed were time constraints and course fees. As for learning expectations of participants, the two key themes that stood out were job opportunities and benefits to learning. In the subsequent subsections, we delve deeper into the findings about these specific themes.

Figure 3

Chart of the Focus Group Discussion Themes (Larger Surface Area Depicts More Mentions of Theme)



Note. Legend of themes not labelled above: 1: Family and Community, 2: Promotion, 3: Uncertainty, 4: Positive Emotions, 5: Priorities for Future, 6: Sense of Achievement, 7: Performance and Growth, 8: Skills Acquisition, 9: Learning Style, 10: Group versus Solo, 11: Flexible versus Structured, and 12: Personal Interest.

Overview—Survey Measures of Intrinsic and Extrinsic Motivations

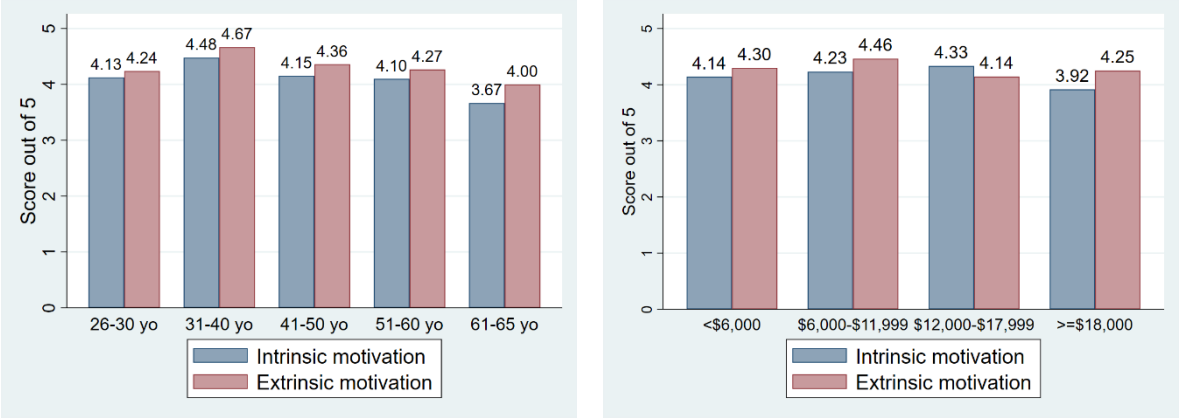
The two measures of intrinsic motivation to learn (the Motivation-to-Learn scale and the Interest/Enjoyment subscale of the IMI) are positively and strongly correlated in the same individual (Pearson correlation coefficient $r = .59$, $p < .001$). Therefore, in our analysis, we use the mean score of the two scales as the measure of intrinsic motivation.

Figure 4 shows an overview of participant scores on the survey measures of intrinsic and extrinsic motivations to learn, across age and household income groups. Participants in their thirties report higher intrinsic and extrinsic motivations to learn compared to other age groups.

The average scores of intrinsic and extrinsic motivations do not appear to vary across income groups. Although our sample does not have statistical power, we note our results differ from the well-documented finding that adults from higher socioeconomic backgrounds (and who are younger) are more likely to participate in adult education (Cincinnato et al., 2014; Desjardins et al., 2006). Our observation suggests that such a learning divide might stem from differences in practical and situational barriers, rather than differences in their motivations to learn.

Figure 4

Intrinsic and Extrinsic Motivations by Age and Household Income

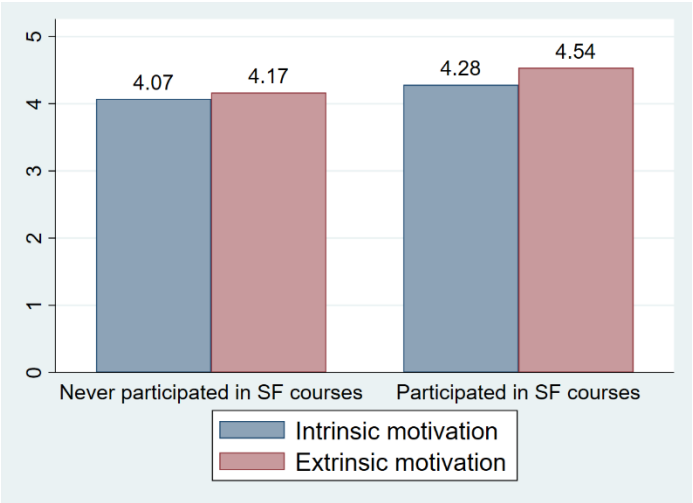


Theme 1: Extrinsic Motivations and Costs

A recurring theme in the discussions among participants was how they weigh the pros and cons of whether to participate in learning, and of different learning options. Our extrinsic motivation measures—which capture the perceived value of skills learning for work—are positively associated with SkillsFuture take-up. Figure 5 depicts the average scores of intrinsic and extrinsic motivations by past SkillsFuture take-up. Participants who have taken SkillsFuture Courses perceived significantly higher extrinsic value in learning (p = .006 by two-sided t-test and p = .009 by Wilcoxon rank-sum test).

Figure 5

Intrinsic and Extrinsic Motivations by SkillsFuture Utilisation



Participants frequently cited assessing the financial and time costs required for attending a course against its potential "returns on investment." Such returns, or expected benefits to learning, include improved job performance, better career prospects, and salary considerations:[8]

[8] We did not ask participants to assess the relative importance of different kinds of benefits or about how they would weigh short- versus long-term benefits, so we are unable to directly evaluate which type of benefit is the most important.

> We have to also face with practicalities of life right? You still need that money salary to… pay bills and all. So you're probably limited to taking up part time courses. (Participant 2)
>
> Obviously, when you move into a new role, you are no longer at the same experience and salary level to your old job, right? And I think there's usually a very important area that people are not aware of right then, and people get… into a shock. You mean, I'm drawing less than what I was drawing. Cause we move into a new role. You are really starting close to an entry level. (Participant 44)

In assessing costs to weigh against the benefits, time is the most frequently cited costly barrier to course participation. This aligns with Cross's (1992) Chain-of-Response Model, which identifies situational barriers and time management difficulties as critical inhibitors to adult learning. In a review, Kyndt and Baert (2013) noted that time scarcity was a key barrier for adults considering educational pursuits, although the literature is limited. Participants described the challenge of fitting learning into their busy schedules. For many, attending courses was perceived as competing with other priorities. They shared often feeling stretched in balancing multiple responsibilities and leisure, allocating time to their work, family, and personal interests:

> For me, I think, yeah, because, like everyone has a busy schedule. So it really depends on whether… when the schedule will be, and whether the company is flexible enough to let me go if it's work hours. (Participant 46)
>
> ... whether can it be prioritised in my schedule, whether it's worth the time or not. (Participant 19)
>
> So a lot of the courses is like weekday nights and weekend. So I mean, if it cannot fit into my schedule, I can never take the courses. Yeah. So I think that's the important part. (Participant 59)

In addition to time constraint, financial cost was another major barrier. Participants frequently talked about whether the monetary costs of educational programmes—tuition fees and potential income loss (for full-time courses with relatively longer duration)—would be worth the expected return in future earnings. Financial costs can deter even highly motivated individuals, especially when considering full-time programmes that are not covered by SkillsFuture. Some participants, despite having high intrinsic motivation to learn, and perceiving high extrinsic value in skills development, choose not to take courses due to financial concerns: Participant 60 mentioned, "… monetary-wise, that's also a consideration as well." Also, Participant 61 expressed, "Cost is really a major factor." (Participant 61 shared he had to manage his finances to consider the needs of his young children.)

Our findings that adult learning decision-making involves weighing extrinsic costs and benefits reflect Human Capital Theory from neoclassical microeconomics (Becker, 1962), which posits that decisions on whether to invest in education, to increase one's own knowledge, skills, and competencies, depend on the associated costs and benefits. Effective approaches to encourage adult learning may therefore be directed at (a) easing the time and monetary burdens of learning; and (b) emphasising the expected tangible benefits of learning, such as how it enables job progression and achievement of career goals.

Theme 2: Uncertainty and Imperfect Information

While people want to gather information on courses and evaluate the benefits and costs of participation, many stumble in doing so due to a lack of information regarding the courses. This reflects the findings of Boeren et al. (2010), who argued that the financial burden of lifelong learning deters even highly motivated individuals when the benefits are uncertain or difficult to quantify:

> I'm not sure if the cost justifies, like what is being taught, and I think, like some others, have mentioned the quality of the courses that, you're not entirely sure until you take it yourself, and then by that point you're not sure if it's worth the investment la.

> (Participant 57, who has not taken any SkillsFuture courses despite scoring high on intrinsic and extrinsic motivations)

Participant 19 spoke of wanting to ensure that the quality of courses was high before he would sign up for them, as well as a desire to obtain information on course quality from past course participants. However, he found that this type of feedback information was lacking, and he wished that there was a "Google review"-like platform where he could gather feedback from past course participants. His sentiments were echoed by other participants:

> I would think that the quality of the courses [on SkillsFuture portal], although it's approved. But… we really got to hear from people who have gone through the courses, and maybe some review. (Participant 22, who scored high on intrinsic motivation to learn)

The respondents seemed unaware of the Training Quality and Outcomes Measurement (TRAQOM) feedback rating system in the SkillsFuture portal.[9] Besides information on the quality of courses, participants also shared that they were unsure of how and where to start looking for courses, and how the SkillsFuture programme worked. Individuals with limited digital literacy may find it especially challenging to understand the criteria and ways to use their training subsidies, navigate complex online course portals, and identify suitable learning programmes:

> Well, you know, like, let's say I'm interested in becoming a therapist, for example. And then there are certain specialised qualifications that you would need. And those may not be available on the website, on the portal… is more to the design of the website itself. If you have all these questions that you want answer, but you can't even find a course. That is accurate to your search prompt. There'll be the last straw that you just give up. And just, you know, like, forget it. I'm not even gonna bother to sign up for the course anyway, because I can't even find it. (Participant 28)

These information gaps suggest it is crucial to design effective ways of offering personalised guidance to potential course seekers. For example, having career consultants, career coaches, or SkillsFuture ambassadors readily accessible at the right times may help overcome informational barriers:

> Yeah, you know, I felt it was very helpful when there were SkillsFuture, SkillsFuture advisors. You know, the promoters that were around. I think… that was helpful for me when… they could narrow down the school for me, the vendor and course, and explain to me. So yeah, more people like that standing around. And you know that… are open to the public. I think that it would be helpful. (Participant 10)

Theme 3: Intrinsic Motivations and Psychological Barriers

As shown in Figure 5, participants who had taken SkillsFuture Courses reported significantly higher intrinsic motivation in learning, compared to those who had not taken SkillsFuture Courses. Our discussions also revealed that a significant number of adults chose to go for courses out of intrinsic interest. Many had the desire to take courses, to learn and upskill themselves, even though the new skills might not be directly applicable in their jobs. While we were primarily interested in understanding participation in career-related skills training, we also included leisure learners in our study, as we find that many who learn for leisure are picking up technical skills to stay relevant and potentially derive future career benefits. Moreover, we note that there could be spillover effects, in that participation in leisure learning could lead to greater confidence or interest to undertake skills training; we discuss evidence for spillovers and complementarity between intrinsic and extrinsic motivations in the next subsection:

> That one is for my personal interest, because we need to do some writings and also present our data output. Right? So those are courses that I picked up myself because I wanted to learn how to do so. And then driving is also really like personal interest la, yeah, to pick up a new skill. (Participant 20, on taking a course on data visualisation)

[9] We discuss TRAQOM under Conclusion and Policy Implications.

> So I think, partly out of interest, partly out of utility. (Participant 32)
>
> Yeah, that's really just for interest. (Participant 2 on learning Japanese language)
>
> Yeah. For me I use it mostly on interest. I signed up a coffee barista, wine survey… all this more so for my interest. And then there's nothing related to my work. (Participant 38)

Conversely, we also uncovered that many were daunted by their own fear of failure. For instance, some expressed doubts about their own abilities to take on a course, especially for courses that stipulated prerequisite knowledge and background. This highlights how a personal sense of adequacy and self-efficacy may play a role in people's decisions to take up courses:

> Some courses have some sort of like prerequisites or qualifications before enrolling into the course. Right? So if I don't have the necessary like background or credentials. I might need to invest more time to learn that skills before or… even to get that certain qualifications before I can enrol in this course. So that's another concern for me. As well. Yeah. (Participant 20, who scored high on perceived value of learning and intrinsic motivation)

Among the participants, there also existed a fear of failing in assessments:

> And then also there's also the other aspect where I think some things sometimes is quite technical. So the government says, you must pass this thing or whatever. Then we'll pay you back full amount, or else we will not subsidise you at all. That means they take back the amount. So then you are then thinking like, maybe then I shouldn't even try, you know, I mean. (Participant 14, who scored high on extrinsic and intrinsic motivations)

Similarly, Participant 9 highlighted the requirement of having to pass course tests with a score of at least 75% to be reimbursed for course fees.

Interestingly, besides the fact that passing is a requirement for financial reimbursement, the fear of assessment also stemmed from feelings of stress, and extended beyond professional courses to learning undertaken for leisure:

> I think one of the fears that I have is like, what if I am not able to learn crocheting well enough, or I just like wasted my money there and then I'm not good enough, or if I compare myself to other batch, which that, enter the course at the same time, like I, I don't do well enough, or I'm like a slow learner something like that along that line. Then… I think, that will sort of discourage me from pursuing this interest in… the crafting. Yeah. (Participant 20 on being discouraged from learning crocheting as a hobby because of the assessment component)

Related to the stress of assessments was the lack of confidence in passing:

> And then there's this at least perceived uncertainty that I might not even get it. So I don't know. Is it guaranteed that if I sign up for this course I will definitely get it. Or is there a chance. (Participant 26 on the uncertainty in getting the passing certification that stopped him from signing up)

Theme 4: The Interplay Between Intrinsic and Extrinsic Motivations

To explore the interplay between intrinsic and extrinsic motivations and skills training, we scatterplot both the motivation measures at the individual level and label each point by whether SkillsFuture Courses were taken by that individual (Figure 6). Classifying participants by whether their intrinsic and extrinsic motivation scores are above or below average, we divide the scatterplot into four quadrants.

Figure 6

The Relationship Between Intrinsic and Extrinsic Motivations and SkillsFuture Use

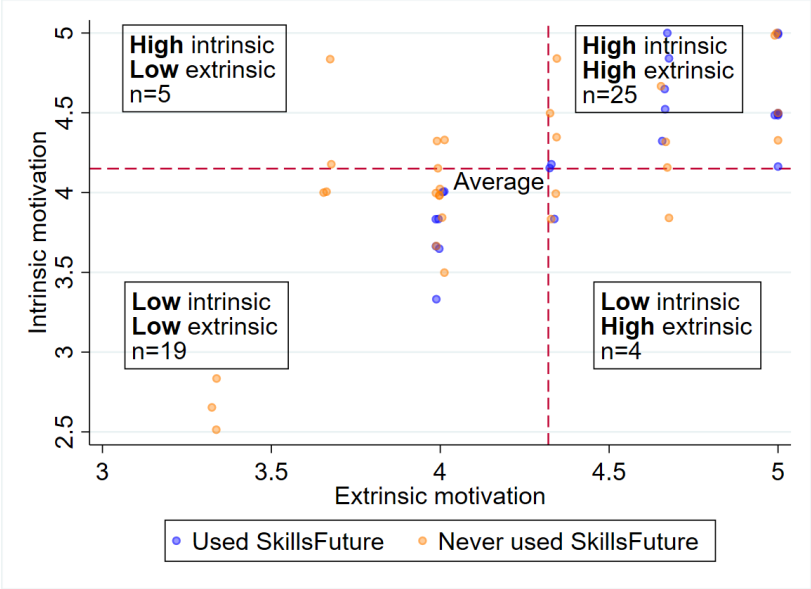


Figure 6 reveals two features. First, extrinsic and intrinsic motivations are positively and strongly correlated in the same individual (Pearson correlation coefficient r = .72, p < .001). Second, SkillsFuture utilisation is positively correlated with the combination of extrinsic and intrinsic motivations—as shown by the bulk of SkillsFuture utilisation cases located in the top-right quadrant of High Intrinsic–High Extrinsic (HI–HE) Motivation.[10] Taken together, this suggests both types of motivations play a complementary—rather than substitutable—role in encouraging skills training (Bénabou & Tirole, 2003; Cerasoli et al., 2014) and supports the validity of our motivation constructs to training take-up. Our evidence also contrasts with the view that extrinsic motivations can crowd-out intrinsic motivations towards learning (Deci et al., 1999).

To explore these themes further, we examine, by groups, how participants reported on the interaction between intrinsic (personal) and extrinsic (career) motivations in adult learning decision-making. We also examine how participants overcame low motivations to engage in adult learning or were stalled by barriers despite high motivation for adult learning.

Low Intrinsic–Low Extrinsic Group

The Low Intrinsic–Low Extrinsic (LI–LE) group has 19 participants and is characterised by a lower rate of SkillsFuture utilisation (seven out of 19; 37%). “Low” motivations are relative, as all participants in this group had scale values exceeding the midpoint value of 3 on our 1–5 unit scale. Regardless, examining the LI–LE group may yield insights for why workers with moderate levels of motivation do nonetheless embark on training.

We found that LI–LE participants who took up SkillsFuture Courses acknowledged that both personal and career interests motivated them; they stressed the importance of skills upgrading for developing alternative career options: Participant 9, a relief student care teacher, said, “Then, for gardening, it’s a plant propagation course. So I want to learn how to propagate a plant. So that is also my interest, and because it’s relevant to my job.”

[10] In our sample, 43% of participants had taken SkillsFuture Courses, so if SkillsFuture use was not related to Motivation, we would expect a similar rate of SkillsFuture utilisation across all Motivation types. Instead, as this subsection discusses, we find that 60% of the High Intrinsic–High Extrinsic Motivation participants utilised SkillsFuture.

Supporting this theme, Participant 25, an assistant project manager in manufacturing, also reported being motivated by both personal interests and the prospect of being able to "switch lines."

Participants also faced direct extrinsic factors, such as employer directives, which helped to overcome lower personal motivations. Many LI–LE participants took up SkillsFuture Courses, as well as Non-SkillsFuture training, because of employer sponsorship or requirements:

> But I was gonna be working in the international school setting. So it is actually a requirement. And it's fully funded by my paymaster. (Participant 35)

> Being a [Learning and Design] specialist a lot of my job is really what the course is teaching. So like learning how to design training programmes using frameworks, knowing how to facilitate conversations, learning how to assess people in terms of their competency. So these are all the skills that I need to do as my job. So I think the company also feels that it's good that we professionalise ourselves. (Participant 58, who works in the training industry)

However, we note the majority of LI–LE participants did not take up SkillsFuture training, perhaps because they lacked sufficient motivation to overcome workplace and practical barriers:

> And in terms of money is like I don't want to pay. I mean that the sum, some of the courses can fully subsidise, and whatever but some of it is quite you do have to pay quite a considerable amount. (Participant 46, who also noted other workplace barriers such as scheduling, lack of employer support, and unwillingness to maintain his workload while on course)

High Intrinsic–High Extrinsic Group

The HI–HE group has 25 participants and is characterised by a higher rate of SkillsFuture utilisation (15 out of 25; 60%). As with LI–LE participants, HI–HE participants also often cited the mutual influence of career relevance as well as personal interest as reasons for taking up SkillsFuture training. This supports the theory that indirect extrinsic motivations, such as improved career prospects from training, may positively moderate and reinforce intrinsic motivation and lead to behavioural change (Deci et al., 1999).

As the positive impact of mutually supportive motivations is clear, we focus on understanding why HI–HE participants may nonetheless fail to engage in training. A common theme was that information and workplace constraints presented barriers to SkillsFuture participation, even among the highly motivated: According to Participant 15, "[The SkillsFuture website] is overwhelming."

Participant 15 expressed difficulty processing information in choosing a trainer or vendor. She was highly concerned about the "reputation" of the course provider, but did not take any courses in the end as she could not verify quality to her satisfaction.

Workplace constraints presented another common barrier. Participant 60 reported that her employer was not able to grant leave from work for training, and therefore did not end up taking any courses. Participant 31 highlighted that he could not commit to blocking out course dates as he could not predict whether he could take leave on those dates given the nature of his work.

Contrasting Motivation Groups

The High Intrinsic–Low Extrinsic (HI–LE) group (n = 5) and Low Intrinsic–High Extrinsic group (n = 4) are relatively rare in our sample, given the positive strong correlation between intrinsic and extrinsic motivations. Only one participant, from Low Intrinsic–High Extrinsic, took a SkillsFuture Course. Interestingly, this one participant also referred to the combined influence of personal and career motivations on their decision to take a Japanese cooking course:

> Because you might not know like, when will, when will be the day that you need to use it, use the skills or knowledge that you learned from the course. (Participant 8, whose proximate reasons were to cook for their family)

Participants in these groups also reported the same workplace barriers to skills training, such as unpredictable work requirements (Participant 4, HI–LE) and tight work schedules (Participant 17, HI–LE).

Complementarity of Intrinsic and Extrinsic Motivations, and "Hygiene" Factors

Participants generally explained their SkillsFuture take-up decisions as being motivated by both personal interest as well as future career prospects, consistent with complementarity between intrinsic and extrinsic motivations. Although our sample is small, the strong correlation between intrinsic and extrinsic motivations, as well as the positive correlation between combined motivation and SkillsFuture take-up, suggests less concern that policies which highlight the extrinsic career benefits of skills training would crowd-out intrinsic motivation for learning. Indeed, even when a worker is less intrinsically motivated, the extrinsic benefits of addressing job market uncertainties or shifting to a better career may convince relatively less-motivated participants to take up training (see Participants 35 and 58 in the LI–LE group).

At the same time, strong complementary motivations alone are insufficient to generate SkillsFuture take-up. Many intrinsically and extrinsically motivated participants noted that lack of employer support, as well as challenges with navigating SkillsFuture and identifying suitable courses, posed barriers to SkillsFuture take-up.

One way of parsing our findings is to consider that barriers to SkillsFuture take-up, particularly employer-related, may be akin to Herzberg et al.'s (1959) "hygiene" factors.[11] While employer support for training, such as study leave and flexible work arrangements, may not directly motivate adult learning, if these supporting "hygiene" factors are absent or inadequate, they hinder participation even when strong intrinsic and extrinsic motivations are present. In turn, this suggests policies must both facilitate education on the extrinsic career benefits of adult learning as well as encourage employers to eliminate "hygiene" factor barriers, so that workers can act on motivations to learn.

Discussion

We summarise our key analysis themes below, followed by brief additional findings.

Theme 1: Extrinsic Motivations and Costs

Extrinsic motivations, such as career advancement, salary increases, job security, and social recognition, were significant drivers of adult learning decisions. Participants often weighed the expected "returns on investment" of a course against the financial and time costs required. Time scarcity emerged as the most significant barrier, with many participants struggling to balance learning with work, family, and personal commitments. Financial concerns also deterred participation, especially when the course fees were high or when there was uncertainty about the tangible benefits of completing a course.

Theme 2: Uncertainty and Imperfect Information

Many adults faced difficulties in making informed decisions about learning opportunities due to actual or perceived incomplete or unclear information about course quality, content, and potential outcomes. Some participants were also confused about how to use SkillsFuture Credits

[11] In Herzberg et al.'s Two-Factor or Motivation–Hygiene Model of workplace satisfaction, a distinction is drawn between factors that create satisfaction and motivation, such as meaningful work and career growth, and hygiene factors such as salary and work conditions that prevent dissatisfaction but do not directly create motivation.

or navigate course portals, especially those with limited digital literacy. This informational gap often contributed to hesitation, inaction, and decision paralysis, discouraging participation even among those with high motivation.

Theme 3: Intrinsic Motivations and Psychological Barriers

Intrinsic motivations, such as personal fulfilment, intellectual curiosity, and the joy of learning, played a crucial role in driving adults to pursue education. Many participants expressed interest in taking courses for personal growth or leisure, even when the latter were not directly related to their careers. However, psychological barriers, including fear of failure, low self-confidence, and anxiety about assessments, undermined these intrinsic motivations. Some participants hesitated to enrol in courses due to concerns about meeting prerequisites or passing mandatory assessments.

Theme 4: The Interplay Between Intrinsic and Extrinsic Motivations

Extrinsic and intrinsic motivations appear to be complementary factors in supporting adult learning. Participants spoke of how courses both fulfilled personal interests and laid the groundwork for future career shifts or improved job skills. There is little evidence in our sample that extrinsic motivation crowds-out intrinsic motivation, particularly since both motivations are strongly positively correlated within individuals, and the combined motivations are also correlated with SkillsFuture utilisation. However, participants were not able to act on their strong combined motivations to take up training unless “hygiene” factors such as employer support were present, to allow participants to take leave or rearrange work flexibly.

Additional Finding: Variation Across Demographic Groups

Quantitative survey results indicated variations in intrinsic and extrinsic motivations across age groups, with participants in their thirties reporting higher motivation levels. Income levels did not significantly influence motivation to learn, suggesting that practical barriers like time and cost, rather than motivational differences, contribute more to the learning divide among adults from different socioeconomic backgrounds.

Limitations

Our FGD respondents were not nationally representative, although they were screened for SkillsFuture Credits eligibility and stratified and quota sampled to represent different groups of Singaporean workers based on age, gender, and SkillsFuture take-up experience. Our small sample size and use of qualitative methods precluded an assessment of statistical representativeness. Our future research plans include a large-scale household survey to examine holistically the trade-off in the adult population’s learning decisions in Singapore, as well as how they vary by demographic subgroups. Further research could design and test interventions to encourage adult learning participation by targeting extrinsic and intrinsic factors in the individual decision-making process.

Conclusion and Policy Implications

Singapore workers often possess significant extrinsic and intrinsic motivations to engage in lifelong learning, but face challenges translating motivation into actual learning participation. Our findings have several policy implications that could address this action gap.

First, addressing the practical barriers of time and cost is crucial. Financial concerns and time scarcity were among the most frequently cited deterrents to participation, even among highly motivated participants. To ease the monetary burden, the government could expand financial support through enhanced SkillsFuture Credits or introduce tiered subsidies for industry-relevant

or in-demand skills. Employers play a critical role and should be incentivised, perhaps through tax breaks or grants, to offer paid study leave, flexible work hours, or cover course fees. Additionally, promoting modular and micro-credential courses can make learning more accessible by allowing adults to flexibly accumulate credits over time, reducing the need for large time commitments.

Second, improving information transparency and accessibility can significantly reduce inaction among potential learners. Many participants struggled with evaluating the costs and benefits of courses due to unclear or incomplete information. While SkillsFuture has the TRAQOM[12] system for capturing feedback on course quality and career impact, it seems that our participants who faced information barriers were either unaware of this system or did not find the data sufficiently useful. Further studying how TRAQOM is utilised by learners, and curating course offerings more carefully, can help to offer learners assurance of the quality of courses. Simplifying information presentation and the process of utilising subsidies, guided by behavioural economics principles like the Easy, Attractive, Social, and Timely (EAST) framework (The Behavioural Insights Team, 2014), can also help learners make better decisions. Expanding the network of Skills Ambassadors, career coaches like those from Workforce Singapore or the National Trades Union Congress' Employment and Employability Institute, or Career Consultants to offer timely and personalised guidance on course selection and usage of subsidies and benefits would further address informational barriers.

Third, implement systems to reduce psychological barriers that undermine intrinsic motivation and self-confidence. We found that fears of failure, assessments, and self-doubt prevented even highly motivated individuals from enrolling in courses. The criteria that learners must pass course assessments to receive financial subsidies can be implemented by course providers in ways that avoid deterrence. Policies that promote low-stakes assessments, pass/fail options, or trial modules could help alleviate these fears. Introducing confidence-building workshops focused on study skills, digital literacy, and managing test anxiety can also support adult learners, particularly those returning to education after a long break. Creating peer support networks or mentorship programmes would further enhance self-efficacy by providing guidance and encouragement from experienced learners.

Fourth, leveraging intrinsic motivation and personal interests can encourage greater participation in lifelong learning. Many participants expressed a desire to learn for personal fulfilment, intellectual stimulation, or sheer enjoyment. Indeed, intrinsic motivations are strongly complementary with extrinsic motivations among our learners, who often cited both personal interest and possible future career benefits as motivating their training choices. Recognising and subsidising more interest-based or leisure courses, such as arts, languages, or hobbies, under the SkillsFuture framework could attract learners who might later pursue more career-focused training. Public campaigns that highlight the joy of learning and personal growth—not just career advancement—could further appeal to intrinsic motivations, and may jointly develop both types of motivations, given the lack of motivational crowding-out in our participants. Sharing success stories of adult learners who pursued courses for personal interest can also normalise lifelong learning and inspire others.

Fifth, fostering a lifelong learning mindset should ideally begin early in life. Embedding lifelong learning principles and self-directed learning strategies into school curricula can help students develop positive attitudes towards continuous education from a young age. Promoting a growth mindset—where students understand that abilities can be developed through effort—can encourage resilience and a love of learning that persists into adulthood.

Finally, behavioural nudges can play a powerful role in overcoming inertia and prompting action. For example, opt-out systems could be introduced, where workers are automatically enrolled in relevant training programmes unless they actively choose to decline. Commitment devices, where learners make public commitments to complete courses (such as sharing goals with friends or employers), can leverage social accountability to improve follow-through.

[12] The SkillsFuture website states that "The Training Quality and Outcomes Measurement (TRAQOM) initiative consists of two perception surveys to capture trainees' feedback on the quality and job/careers impact of courses funded by SSG and courses eligible for SkillsFuture Credit (SFC)." See: https://www.skillsfuture.gov.sg/traqom

Personalised reminders about expiring SkillsFuture credits or upcoming courses aligned with learners' interests can also serve as timely prompts, encouraging participation.

Overall, our study suggests there remains significant potential to improve learning uptake and support the growth of human capital. Adults in Singapore are generally motivated—both intrinsically and extrinsically—to engage in learning, driven by personal interests as well as career-related goals. Rather than a lack of motivation, the primary challenge lies in overcoming barriers to learning participation. Behavioural science offers cost-effective and impactful approaches to fostering behavioural change in lifelong learning, particularly through policies that enhance the transparency and accessibility of information.

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REFERENCES

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, *70*(5, Part 2), 9–49. http://doi.org/10.1086/258724

Bélanger, P. (2011). *Study guides in adult education: Vol. 2. Theories in adult learning and education*. Verlag Barbara Budrich. https://doi.org/10.2307/j.ctvbkjx77

Bénabou, R., & Tirole, J. (2003). Intrinsic and extrinsic motivation. *The Review of Economic Studies*, *70*(3), 489–520. https://doi.org/10.1111/1467-937X.00253

Boeren, E., Holford, J., Nicaise, I., & Baert, H. (2012). Why do adults learn? Developing a motivational typology across 12 European countries. *Globalisation, Societies and Education*, *10*(2), 247–269. https://doi.org/10.1080/14767724.2012.678764

Boeren, E., Nicaise, I., & Baert, H. (2010). Theoretical models of participation in adult education: The need for an integrated model. *International Journal of Lifelong Education*, *29*(1), 45–61. https://doi.org/10.1080/02601370903471270

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, *140*(4), 980–1008. https://doi.org/10.1037/a0035661

Cincinnato, S., De Wever, B., & Valcke, M. (2014). The learning divide in formal adult education: Why do low-qualified adults participate less? In P. Guimarães, C. Cavaco, L. Marrocos, C. Paulos, A. Bruno, S. Rodrigues, & M. Marques (Eds.), *Local change, social actions and adult learning: Challenges and responses, proceedings* (pp. 401–415). University of Lisbon.

Cook, D., & Artino, A. (2016). Motivation to learn: An overview of contemporary theories. *Medical Education*, *50*(10), 997–1014. https://doi.org/10.1111/medu.13074

Cross, K. P. (1992). *Adults as learners: Increasing participation and facilitating learning*. John Wiley & Sons.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). The undermining effect is a reality after all—Extrinsic rewards, task interest, and self-determination: Reply to Eisenberger, Pierce, and Cameron (1999) and Lepper, Henderlong, and Gingras (1999). *Psychological Bulletin*, 125(6), 692–700. https://doi.org/10.1037/0033-2909.125.6.692

Desjardins, R., Rubenson, K., & Milana, M. (2006). *Unequal chances to participate in adult learning: international perspectives*. UNESCO: International Institute for Educational Planning. https://unesdoc.unesco.org/ark:/48223/pf0000148815

Gorges, J., & Kandler, C. (2012). Adults' learning motivation: Expectancy of success, value, and the role of affective memories. *Learning and Individual Differences*, *22*(5), 610–617. https://doi.org/10.1016/j.lindif.2011.09.016

Gorges, J., Maehler, D. B., Koch, T., & Offerhaus, J. (2016). Who likes to learn new things: Measuring adult motivation to learn with PIAAC data from 21 countries. *Large-Scale Assessments in Education*, *4*, Article 9. https://doi.org/10.1186/s40536-016-0024-4

Goto, S. T., & Martin, C. (2009). Psychology of success: Overcoming barriers to pursuing further education. *The Journal of Continuing Higher Education*, *57*(1), 10–21. https://doi.org/10.1080/07377360902810744

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work* (2nd ed.). John Wiley & Sons.

Kim, S., Chen, Z. W., Tan, J. Q., & Mussagulova, A. (2021). A case study of the Singapore SkillsFuture Credit scheme: Preliminary insights for making lifelong learning policy more effective. *Asian Journal of Political Science*, *29*(2), 192–214. https://doi.org/10.1080/02185377.2021.1917431

Kyndt, E., & Baert, H. (2013). Antecedents of employees' involvement in work-related learning: A systematic review. *Review of Educational research*, *83*(2), 273–313. https://doi.org/10.3102/0034654313478021

Lee, L. (2024, February 26). The big read: Generous SkillsFuture carrot for Singaporeans to get serious about lifelong learning, but will they bite? *Channel News Asia*. https://www.channelnewsasia.com/today/big-read/skillsfuture-courses-training-lifelong-learning-employability-budget-2024-big-read-4146801

Lee, P., & Pang, V. (2013). Motivational factors in continuing education an academic achievement of adult learners. *Malaysian Journal of Learning and Instruction*, *10*, 57–77. https://doi.org/10.32890/mjli.10.2013.7651

Lim, Z. Y., Yap, J. H., Lai, J. W., Mokhtar, I. A., Yeo, D. J., & Cheong, K. H. (2024). Advancing lifelong learning in the digital age: A narrative review of Singapore's SkillsFuture programme. *Social Sciences*, *13*(2), Article 73. https://doi.org/10.3390/socsci13020073

Loeng, S. (2020). Self-directed learning: A core concept in adult education. *Education Research International*, *2020*(1), Article 3816132. https://doi.org/10.1155/2020/3816132

McCombs, B. L. (1991). Motivation and lifelong learning. *Educational Psychologist*, *26*(2), 117–127. https://doi.org/10.1207/s15326985ep2602_4

Riddell, S., Markowitsch, J., & Weedon, E. (Eds.). (2012). *Lifelong learning in Europe: Equity and efficiency in the balance*. Bristol University Press. https://doi.org/10.2307/j.ctt9qgnfk

Rothes, A., Lemos, M. S., & Gonçalves, T. (2014). Motives and beliefs of learners enrolled in adult education. *Procedia—Social and Behavioral Sciences*, *112*, 939–948. https://doi.org/10.1016/j.sbspro.2014.01.1252

Ryan, R. M., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2000b). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Tan, C. (2017). Lifelong learning through the SkillsFuture movement in Singapore: Challenges and prospects. *International Journal of Lifelong Education*, *36*(3), 278–291. https://doi.org/10.1080/02601370.2016.1241833

The Behavioural Insights Team. (2014). *EAST: Four simple ways to apply behavioural insights* (BIT Publication Report). https://www.bi.team/wp-content/uploads/2015/07/BIT-Publication-EAST_FA_WEB.pdf

Appendix A

FGD Questions for Groups With Participants Who Have Taken SkillsFuture Courses

Theme: Lived Experiences and Reality of Adult Learning

1. What courses did you take in the past 2 years?
2. What motivated you to take the course?
3. Tell us the story behind how you came about deciding to take this course.
4. What were some of the motivations behind you taking the course?
5. What were some of the distractors/challenges you faced in your decision to take the course?

Theme: Aspirations/Alternate Reality of Adult Learning

6. Are there other courses you would have liked to have taken? (collaborative board)
7. What would be the ideal situation that would enable you to take the course (resources, time, and bandwidth)?
8. What will enable you to take the course?
9. What is keeping you from taking the course?
10. What will enable you to overcome challenges from taking the course?

Not listed: Icebreakers/Conversation starters and follow-up questions.

Appendix B

FGD Questions for Groups With Participants Who Have Not Taken SkillsFuture Courses

Theme: Lived Experiences and Reality of Adult Learning

1. Why have you not taken any SkillsFuture courses?
2. What prevented you from taking any SkillsFuture course?
3. Tell us the story behind how you came about deciding not to take any SkillsFuture courses.
4. What were some of the distractors/challenges you faced in your decision-making process?

Theme: Aspirations/Alternate Reality of Adult Learning

5. Are there courses you would have liked to have taken?
6. What would be the ideal situation that would enable you to take the course (resources, time, and bandwidth)?
7. What will enable you to take the course?
8. What is keeping you from taking the course?
9. What will enable you to overcome challenges from taking the course?

Not listed: Icebreakers/Conversation starters and follow-up questions.

Job Burnout and Subjective Well-Being of Workers in Singapore: The Role of Demographic, Job-Related, and Social Support Factors

Ruby Toh and Yee Zher Sheng

Abstract

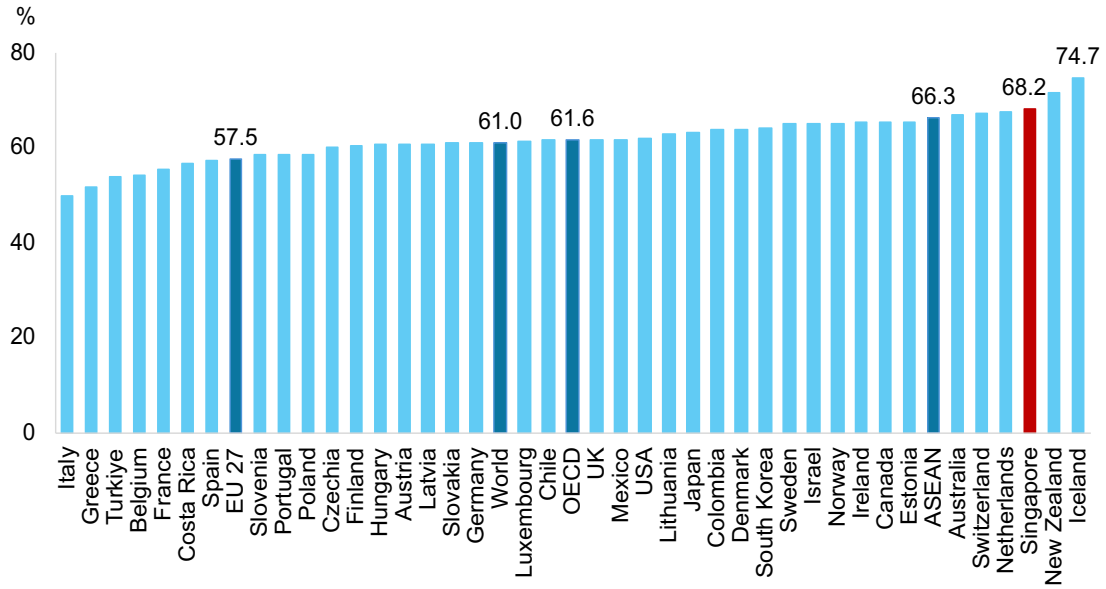
Singapore workers spend approximately 44 hours per week on their full-time jobs, ranking among the highest in the world. As workers remain employed for longer periods because of increased life expectancy and delayed retirement, prolonged working hours have made burnout an issue of increasing concern especially as it has serious consequences on workers' health, job commitment, and productivity. The importance of recognising the severity of burnout and its adverse consequences on workers' lives is underscored by its recent classification by the World Health Organization as an occupational syndrome that develops from ongoing workplace stress that leads to multiple physical and mental health risks. This study investigates burnout prevalence among workers in Singapore and how job demands and resources can impact workers' subjective well-being. Survey data from 2,000 workers show that burnout affects 43.7% of those surveyed. Those most susceptible to burnout are younger workers in jobs with high intensity and complex tasks, and workers doing excessive overtime work. Having good physical and mental health and social support among married individuals are resources that can moderate burnout experiences. The study also highlights the critical need for targeted interventions that focus on work-life harmony initiatives together with peer and supervisory support as well as resilience training. It identifies structural workplace changes as essential solutions including time pressure reduction alongside efficiency-focused systems that can alleviate work duties, besides having a supportive work culture. These findings support global workforce sustainability through evidence-based recommendations for reducing burnout risks and improving worker well-being in Singapore.

Introduction

Being at work constitutes a considerable part of most people's lives. In Singapore, the labour force participation rate is one of the highest in the world at 68.2% in 2024 (Figure 1). With a prolonged working life as a result of higher life expectancy and later retirement, workers in Singapore can be expected to spend 45 years or more of their lives at work.[1] Given that a full-time employee works an average of 44 hours per week (Ministry of Manpower [MOM], 2024), at least a third of the day, or over half of one's waking hours, is usually spent at work. In fact, there are indications that Singapore is one of the most overworked countries in the world (Randstad Singapore, 2022; "Singapore named most", 2022; "Singapore ranks 32", 2019). In fact, workers in Singapore work 7.4 hours more per week than the average worker in developed countries (Figure 2). With a substantial amount of time devoted to work, an individual's well-being can be expected to be impacted by job-related factors such as the nature of work, working conditions, work environment, and the extent of peer and social support.

Figure 1

Labour Force Participation Rate, 2024

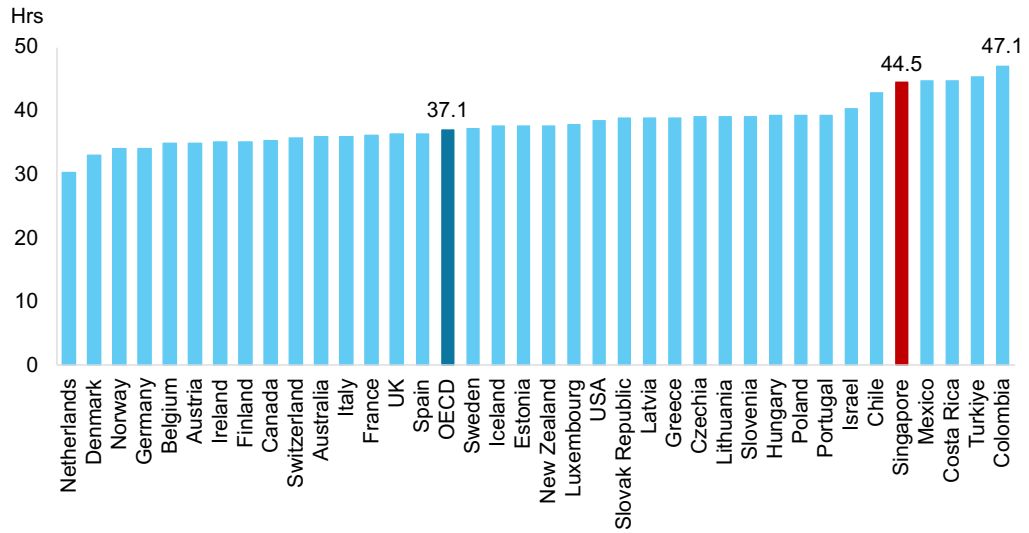


Note. Data obtained from International Labour Organization (ILO, 2025) and MOM (2024).

[1] Singapore employers must re-employ eligible employees aged between 63 years and 68 years, but they can change the scope of the job and employment terms. The retirement age will be raised to 64 years in 2026 and to 65 years by 2030, and similarly, the re-employment age to 69 years and 70 years respectively (MOM, 2023). This is to support senior workers to continue working if they are willing and able to and improve their retirement adequacy, given that Singapore's life expectancy at 83 years is one of the highest in the world (Ministry of Health, 2024).

Figure 2

Usual Weekly Working Hours, 2023



Note. Data refer to the mean hours worked per week in the main job. Data obtained from the Organisation for Economic Cooperation and Development (OECD, 2025) and MOM (2024).

Theoretical Concept

Work burnout is a concept that emerged in the 1970s that gained the attention of both academic researchers and practitioners in their effort to understand why burnout occurs and how it can be ameliorated or prevented. Burnout is a state of physical, mental, and emotional exhaustion that can occur when one experiences excessive or prolonged stress, with feelings of being under constant pressure. It can be regarded as an exhaustion of one's capacity to maintain motivation, commitment, and involvement to make a meaningful impact at work (Schaufeli et al., 2009). As individuals often have a psychological relationship to their job, the experience of burnout (poor self-esteem, emotional exhaustion, and cynicism) can negatively impact work engagement (efficiency, involvement, performance, and sense of accomplishment) (Elloy & Patil, 2012; Maslach et al., 2012).

Recently, the World Health Organization classified burnout as an occupational syndrome in its 11th Revision of the International Classification of Diseases which took effect in 2022. Under this classification, burnout is "a syndrome conceptualised as resulting from chronic workplace stress that has not been successfully managed." Individuals with burnout experience "feelings of energy depletion or exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and reduced professional efficacy" (World Health Organization, 2019). These signs and symptoms are recognised as being associated with chronic stress at work that contributes to specific health-related conditions. In Europe, burnout is an official diagnosable medical condition that opens the door to subsidies for medical treatment.

Studies have shown that burnout can lead to a deterioration in physical and mental health, contributing to headaches, prolonged fatigue, gastrointestinal issues, musculoskeletal pain, respiratory problems, coronary heart disease, type 2 diabetes, insomnia, and depression (Bharathi & Sujatha, 2024; Salvagioni et al., 2017). Workers in more emotionally demanding jobs tend to be more severely impacted, e.g. teachers, doctors, nurses, social workers, counsellors, and other care and service workers (Brotheridge & Grandey, 2002; Cho et al., 2023; Koh et al., 2015). Certain work environments and working conditions can also contribute to burnout such as excessive work pressures, prolonged work hours, toxic work culture (harassment, bullying, etc.), work hazards and hassles, and poor peer or supervisor support (Leiter & Robichaud, 1997; Salvagioni et al., 2017; Yin et al., 2023). The COVID-19 pandemic blurred the boundaries between work and personal life, exacerbating stress and burnout among some workers as they

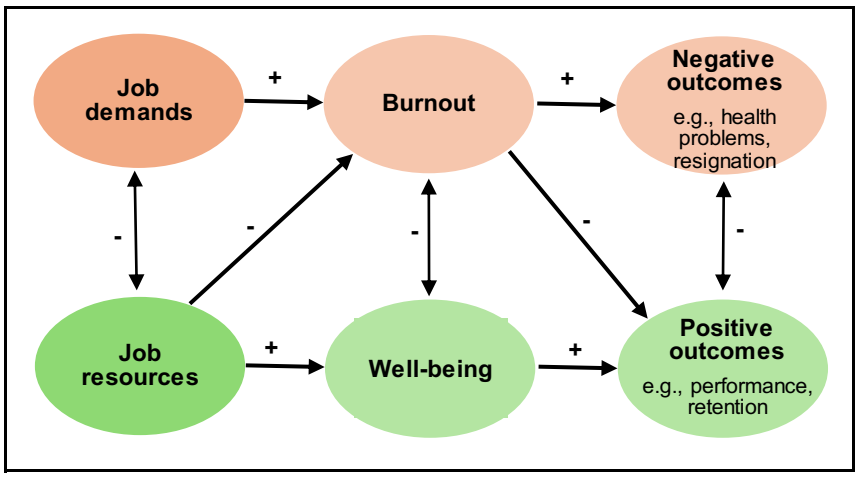
attempted to navigate remote work with increased home and work demands (Galanis et al., 2021; Jalili et al., 2021).

According to Demerouti et al. (2001), the relationship between burnout, health, working conditions, and work performance can be explained by the Job Demands–Resources (JD–R) model which looks at the physical, psychological, social, and organisational characteristics of a job. A job has both (positive) job resources and (negative) job demands. Job demands are energy-depleting and can cause fatigue, stress, burnout, and health impairment, while job resources stimulate work motivation, personal growth, and development. A worker's health and well-being result from the balance between job demands and job resources. Schaufeli and Bakker (2004) extended the model to include work engagement (Figure 3). Job demands that can cause strain and exhaustion include workload, time pressure, rotating shifts, and the work environment, while job resources that contribute to engagement and retention are job security, job control, employee participation, supervisor support, feedback, and rewards.

There have been few studies on the prevalence of burnout in Singapore. A study by Tan et al. (2022) found that 71.3% of 6,048 health professionals surveyed in 2019 experienced high burnout in at least one of the categories measured, 35.3% in at least two categories, and 16.2% in all three categories. Another study by Nagarajan et al. (2024) using pooled data estimated that the global burnout rate was 39% for 215,787 health care professionals (42% during the COVID-19 pandemic and 35% during the non-pandemic period). Recent workplace wellness polls highlighted the prevalence of burnout among workers across different occupations in Singapore, estimated variously at 61% (n = 1,018, Employment Hero) and 67% (n = 1,000, Telus Health) in 2024 (Zalizan, 2025). It should be noted that burnout estimates across studies are not directly comparable due to differences in study design, target population, measurement tools, and timeframe.

Figure 3

Job Demands–Resources Model



Note. Adapted from Schaufeli and Bakker (2004); and Schaufeli and Taris (2014).

Research Method

Research Questions and Hypotheses

This paper examines the less researched area of the prevalence of burnout among workers in Singapore, and the relationship between burnout, well-being, and job demands and resources. The research questions and hypotheses are as follows:

RQ1: What is the prevalence of burnout among workers in Singapore?

RQ2: Do job demands (e.g. excessive working hours, job intensity, and job complexity) and job resources (e.g. communication and work autonomy) affect burnout prevalence?

RQ3: What is the relationship between subjective well-being and burnout among workers?

H1: Younger workers have higher burnout prevalence compared to older workers.

H2: Higher job demands are positively associated with higher levels of burnout among workers.

H3: More job resources are negatively associated with burnout prevalence among workers.

H4: Higher levels of subjective well-being are associated with lower burnout.

H5: Workers with stronger physical and mental health have lower burnout prevalence.

Measures

The Maslach Burnout Inventory (MBI) is a commonly adopted measure but it is proprietary and carries licensing fees. The MBI comprises 16 items for the General MBI survey and 22 items for the Health Services Personnel survey. An alternative widely used nonproprietary measure is the single-item burnout question (SIBOQ) that was found to be valid, reliable, and comparable to the MBI (Dolan et al., 2015; Elo et al., 2003; Galanis et al., 2021). It is, however, less reliable in comparison with external benchmarks necessary for international studies (Hagan et al., 2024). Nevertheless, the SIBOQ is adequate for the purposes of this study. It is a single question that asks respondents to classify their level of burnout, using their own definition of burnout, according to five choices that correspond to a 5-point Likert scale:

1. I enjoy my work. I have no symptoms of burnout.
2. Occasionally I am under stress, and I don't always have as much energy as I once did, but I don't feel burned out.
3. I am definitely burning out and have one or more symptoms of burnout, such as physical and emotional exhaustion.
4. The symptoms of burnout that I'm experiencing won't go away. I think about frustration at work a lot.
5. I feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

Individuals who classify their level of burnout as 1 or 2 are not burnt out, while those who select options 3 to 5 are burnt out. Option 3 is equivalent to having some level of burnout, option 4 denotes a high burnout level, while option 5 represents a very high level of burnout.

Following the JD–R theory, burnout is examined in relation to subjective well-being, job demands (e.g. working hours and care responsibilities), and job resources (nature of job, and family and social support). *Subjective well-being* refers to "good mental states, including all of the various evaluations, positive and negative, that people make of their lives and the affective

reactions of people to their experiences" (OECD, 2013, p. 10). It was measured according to four dimensions adapted from the OECD, namely, Core, Affect, Eudaimonic, and Domain:

1. *Core* (life evaluation) assesses workers' overall life satisfaction based on a single item according to a 7-point Likert scale that ranges from completely dissatisfied to completely satisfied.
2. *Affect* (emotional well-being) comprises negative and positive affect that measure a person's feelings or recent positive and negative emotions. This measure includes six and four items respectively, according to an 11-point Likert scale. Net affect scores (i.e. positive less negative scores) are used to determine an individual's affect or emotional well-being. Reliability analysis revealed that the scale demonstrated high internal consistency with Cronbach's α = .89 for positive affect and Cronbach's α = .88 for negative affect.
3. *Eudaimonic* (psychological well-being) measures the sense of meaning and purpose in life, or good psychological functioning. The 14-item scale assesses various aspects of eudaimonia, including positive emotions, engagement, relationships, meaning, and accomplishment according to a 5-point Likert scale. The scale demonstrated high reliability with Cronbach's α = .92.
4. *Domain* (work well-being) comprises five items that assess an individual's satisfaction with the job, career, physical health, and financial adequacy, both currently and for retirement. The scale showed high reliability with Cronbach's α = .95.

The *Overall Well-being Index* is calibrated as the mean of the four dimensions and standardised according to a 5-point system. The resulting scale is equally distributed according to five levels of overall well-being ranging from very low and low well-being to medium, high, and very high well-being. It is atypical compared to typical population well-being indicators as it is calibrated for workers using work-related measures for the Domain dimension. The composite scale demonstrated high reliability with Cronbach's α = .93.

Data Collection

A national online survey was conducted in May–June 2024 and implemented by a survey vendor. Participants were sourced through convenience sampling with inclusion criteria for nationality, age, and employment status, namely, economically active Singapore Citizens and Permanent Residents aged 21 years and above. The survey was implemented as part of IAL-NTUC Study on Well-being of Workers in Singapore (National Trades Union Congress & Singapore University of Social Sciences-Institute for Adult Learning, 2025). The characteristics of the achieved sample are summarised in Table 1.

The study obtained Institutional Review Board approval from the Singapore University of Social Sciences. Respondents were aware of the voluntary nature of participation and all responses were kept anonymous with no identifiable information or IP addresses collected by the researchers.

Data Analysis

Logistic regression analysis was conducted to examine the associations between job demands, job resources, subjective well-being, and burnout prevalence. The selection of predictors for the regression model was guided by the JD–R theoretical framework, ensuring that all key theoretical constructs were included. A standard entry method was used where all independent variables were entered simultaneously to assess their independent contributions to the likelihood of burnout. Model fit was primarily assessed using McFadden's R^2 (pseudo-R^2) statistic which indicates the proportion of variation in burnout explained by the predictors. A higher McFadden's R^2-value suggests better model fit. Multicollinearity was checked using Variance Inflation Factors (VIFs) to ensure independence among the predictors. Missing data were addressed using listwise deletion and robustness checks were conducted to verify the

consistency of results across model specifications. The model selected has log-likelihood (LR) model with significant *p*-value for fit and lowest Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). The final LR model has McFadden's R^2 = .26 which suggests that approximately 26% of the variance in burnout is explained by the predictors. While this may seem low, it is generally acceptable in fields such as this where human behaviour is influenced by many factors that are difficult to capture fully (Cohen, 1988). It has $p < .001$ and the lowest AIC = 1340.510 and BIC = 1735.628. Multicollinearity tests show that the regression model is acceptable with mean VIF = 1.36.

Table 1

Sample Characteristics

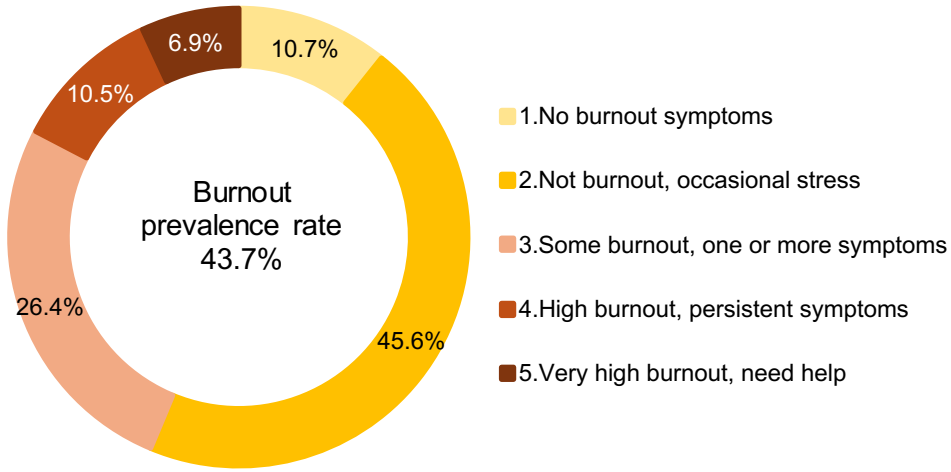
	Sample
Age	
Below 40 years	53.6%
40 Years and over	46.4%
Median (years)	39.9
Gender	
Male	45.5%
Female	54.5%
Nationality	
Singapore Citizen	89.9%
Permanent Resident	10.2%
Education	
Non-tertiary	17.0%
Tertiary	83.0%
Income	
Very low (below S$2,000)	16.2%
Low (S$2,000–S$4,999)	43.4%
Medium (S$5,000–S$7,999)	23.8%
High (S$8,000–S$10,999)	9.1%
Very high (S$11,000 and over)	7.7%
Contract	
Permanent	72.4%
Fixed-term	16.3%
Casual/on-call/self-employed	11.4%
Occupation	
Manager	10.0%
Professional	45.9%
Associate professional	11.4%
Rank and file	30.6%
Other	2.2%

Industry	
Manufacturing	10.7%
Construction	4.3%
Services	81.5%
Education and Public Administration	14.7%
Health and Social Services	9.8%
Financial and Insurance Activities	8.6%
Information and Communications	8.5%
Professional, Scientific, and Technical Activities	8.1%
Wholesale and Retail Trade	7.9%
Administrative and Support Service Activities	6.0%
Transportation and Storage	4.5%
Accommodation and Food Service Activities	3.3%
Arts, Entertainment, and Recreation	2.5%
Real Estate Activities	2.2%
Other Service Activities	5.4%
Other	3.6%

Note. Some figures may not add to 100% due to rounding. The survey sample is not directly comparable with the national labour force employment data as labour force data include workers aged 15–20 years, while this age group is not in the study's sampling frame. Nevertheless, the distribution for job-related variables (the focus of this study), e.g. income, occupation, and industry, is close to the labour force distribution. Data computed from MOM (2024).

Figure 4

Levels of Burnout



Findings

To examine RQ1 on the prevalence of burnout among the workers in Singapore, descriptive statistics show that the prevalence of burnout was 43.7% among the 2,000 workers surveyed. About one in five workers (26.4%) reported having some burnout and experiencing one or more symptoms of burnout such as physical and emotional exhaustion. One in 10 (10.5%) had high

burnout with persistent symptoms, while one in 15 (6.9%) had very high burnout to the point of needing help or some change in their situation (Figure 4).

The prevalence of burnout was higher among younger workers aged below 40 years than older workers aged 40 years and above (50% vs. 36.4%) and was particularly high among those aged 30–39 years (52.4%) (Figure 5). This finding supports H1 which posits that younger workers have higher burnout prevalence compared to older workers. Studies have shown that longer work experience and self-efficacy help to buffer the impact of stress and burnout among older workers (Makara-Studzińska et al., 2019; Marchand et al., 2018; Shoji et al., 2016).

Older male workers have a higher burnout rate than females (37.8% vs. 21.2%). This is likely due to the prolonged working hours among older males: the median working hours per week for males working full-time was 44 hours compared to 33 hours per week for females. In contrast, younger males put in similarly long hours as females (42 hours vs. 40 hours).

Having child dependents did not result in workers having higher burnout prevalence except for those with more than three children (54.5%). On the other hand, having elderly or disabled dependents did not appear to result in higher burnout prevalence. Burnout prevalence was found to be comparatively higher among singles (49.2%), tertiary graduates (45.5%), and those in the construction industry (48.2%).

Further logistic regression analysis was conducted to examine RQ2 and RQ3. The model with the best fit is shown in Table 2. Burnout was more likely among workers who were younger than those who were older. This finding supports H1 and is consistent with other studies that showed that age and work experience can act as mediators in decreasing burnout experiences.

Table 2

Regression Results

Burnout	OR	*SE*	*z*	*p* > *z*		[95% Confidence Interval]	
Age	0.99	0.01	−1.72	.086	*	0.97	1.00
Gender							
Female	0.91	0.14	−0.59	.552		0.67	1.24
Nationality							
Permanent Resident	1.56	0.38	1.86	.063	*	0.98	2.50
Education							
Tertiary	0.89	0.24	−0.44	.658		0.52	1.52
Marital status							
Married	0.67	0.14	−1.91	.056	*	0.45	1.01
Divorced, widowed, separated	1.03	0.44	0.06	.953		0.44	2.40
Elderly/disabled care	1.05	0.17	0.30	.764		0.77	1.44
Number of children							
One	1.80	1.68	0.63	.527		0.29	11.21
Two	0.87	0.22	−0.53	.598		0.53	1.44
Three	1.07	0.28	0.26	.794		0.64	1.79
Four or more	1.28	0.59	0.53	.599		0.51	3.17
Income							
Low (S$2,000–S$4,999)	0.84	0.27	−0.52	.600		0.45	1.59

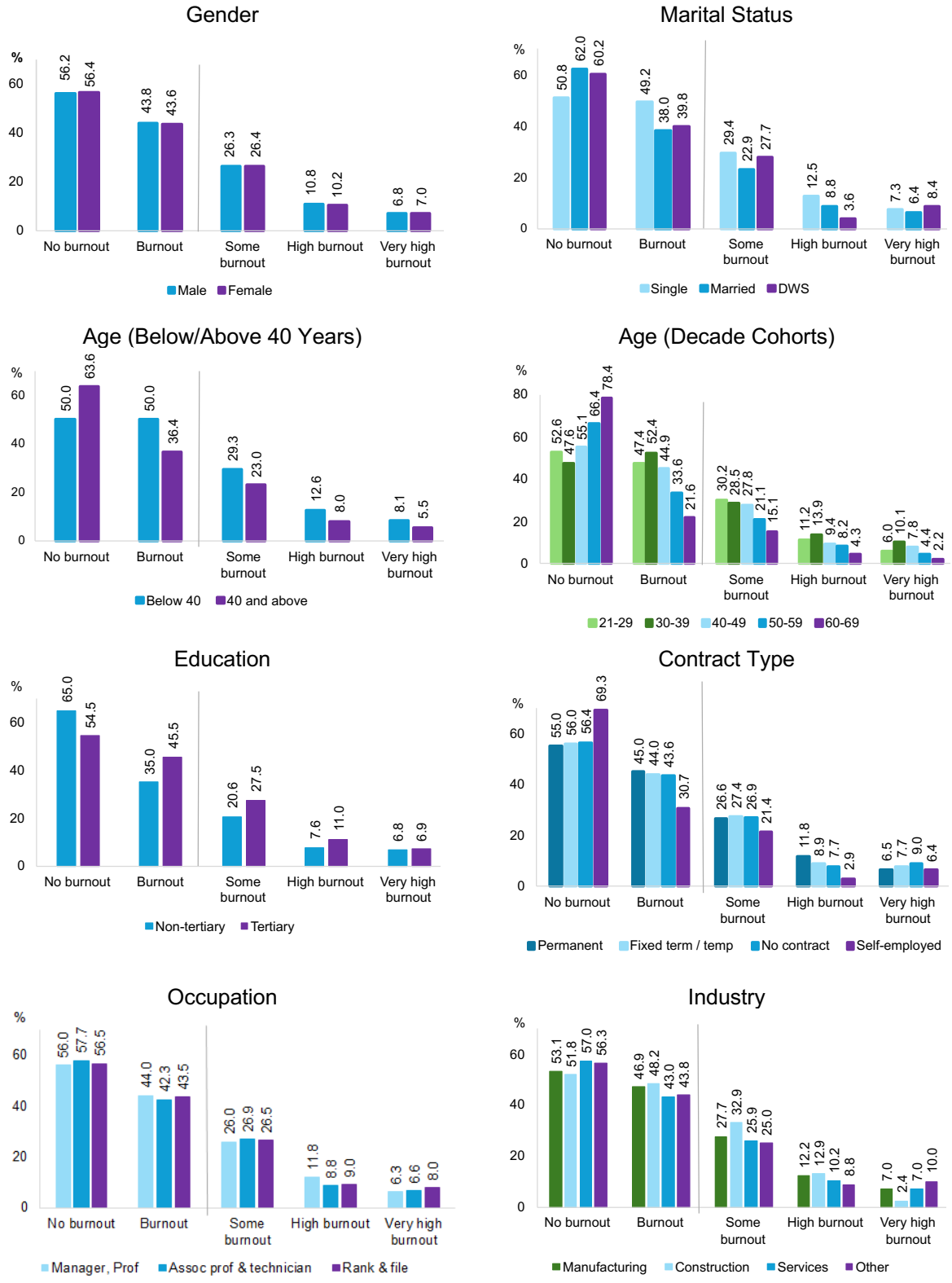
Burnout	OR	*SE*	*z*	*p* > *z*		[95% Confidence Interval]	
Medium (S$5,000–S$7,999)	1.01	0.37	0.03	.978		0.50	2.06
High (S$8,000–S$10,999)	1.03	0.43	0.07	.943		0.46	2.33
Very high (S$11,000 and over)	1.05	0.45	0.12	.903		0.46	2.43
Type of contract							
Fixed-term contract	0.96	0.23	−0.19	.852		0.60	1.52
Temp/recruitment agency contract	1.75	0.81	1.21	.225		0.71	4.34
No contract/verbal agreement	0.86	0.44	−0.30	.768		0.31	2.36
Other	1.32	1.23	0.30	.765		0.21	8.21
Self-employed	0.85	0.40	−0.35	.725		0.33	2.15
Occupation							
Professional, manager, assoc prof, technician	1.13	0.29	0.46	.645		0.68	1.87
Rank and file	1.66	0.48	1.76	.079	*	0.94	2.94
Other	1.82	1.24	0.87	.383		0.48	6.95
Industry							
Agriculture and Fishing	1.78	2.27	0.45	.652		0.15	21.78
Mining and Quarrying	0.64	0.57	−0.51	.611		0.11	3.64
Manufacturing	1.18	0.74	0.26	.796		0.34	4.03
Electricity, Gas, Steam, and Air-Conditioning Supply	0.35	0.41	−0.89	.375		0.04	3.52
Water Supply, Sewerage, Waste Management, and Remediation Activities	1.41	0.58	0.83	.408		0.63	3.16
Wholesale Trade	0.57	0.33	−0.99	.322		0.18	1.75
Retail Trade	0.99	0.41	−0.03	.973		0.44	2.22
Transportation and Storage	0.97	0.41	−0.07	.941		0.42	2.22
Accommodation and Food Service Activities	0.77	0.44	−0.46	.644		0.26	2.33
Information and Communications	0.94	0.29	−0.19	.850		0.51	1.73
Financial and Insurance Activities	0.49	0.16	−2.16	.031	**	0.25	0.94
Real Estate Activities	2.15	1.14	1.45	.146		0.77	6.07
Professional, Scientific, and Technical Activities	0.70	0.24	−1.05	.295		0.36	1.36
Administrative and Support Service Activities	0.74	0.29	−0.78	.433		0.35	1.58
Public Administration and Defence	0.60	0.21	−1.44	.150		0.30	1.20
Education	1.08	0.38	0.22	.828		0.54	2.16
Health and Social Services	0.57	0.19	−1.72	.085	*	0.30	1.08
Arts, Entertainment, and Recreation	1.02	0.55	0.04	.970		0.36	2.92

Burnout	OR	*SE*	*z*	*p* > *z*		[95% Confidence Interval]	
Other Service Activities	0.47	0.21	−1.69	.090	*	0.20	1.13
Others	0.44	0.60	−0.60	.550		0.03	6.40
Work overtime							
Almost never	1.46	0.62	0.89	.372		0.64	3.36
Around quarter of the time	2.39	0.97	2.14	.032	**	1.08	5.30
Around half the time	2.70	1.19	2.25	.024	**	1.14	6.41
Around three quarters of the time	5.45	2.63	3.51	.000	***	2.12	14.01
Almost all the time	2.77	1.33	2.12	.034	**	1.08	7.09
All the time	7.48	4.61	3.26	.001	***	2.23	25.06
Job complexity—High	1.85	0.32	3.54	.000	***	1.32	2.60
Work repetitiveness—High	1.24	0.19	1.37	.172		0.91	1.67
Job intensity—High	1.65	0.34	2.47	.014	**	1.11	2.46
Job autonomy—High	1.04	0.17	0.22	.826		0.75	1.44
At least 2 weeks of continuous training	0.95	0.16	−0.33	.745		0.68	1.32
Took part in job-related training	0.96	0.17	−0.22	.828		0.69	1.35
Communication	0.70	0.17	−1.45	.146		0.43	1.13
Engagement—High	0.87	0.15	−0.84	.401		0.63	1.21
Commitment—High	0.76	0.14	−1.47	.141		0.52	1.10
Flexible Work Arrangements	0.83	0.13	−1.20	.232		0.61	1.13
Job prospects—High	1.07	0.19	0.38	.702		0.76	1.51
Well-being—High (ref: Low)							
Core	1.25	0.24	1.15	.248		0.86	1.83
Positive affect	0.71	0.13	−1.87	.061	*	0.50	1.02
Negative affect	2.32	0.37	5.23	.000	***	1.69	3.17
Eudaimonic	0.90	0.20	−0.50	.618		0.58	1.38
Domain (work)	0.45	0.09	−4.20	.000	***	0.31	0.65
Physical and mental health (ref: Poor)							
Fair	0.44	0.17	−2.13	.033	**	0.21	0.94
Good	0.25	0.10	−3.52	.000	***	0.11	0.54
Very good	0.24	0.11	−3.16	.002	***	0.10	0.58
Excellent	0.19	0.15	−2.14	.032	**	0.04	0.87
Firm size							
Large enterprise	1.01	0.16	0.07	.946		0.74	1.38
_cons	4.07	3.39	1.69	.092	*	0.80	20.84

Note. n = 1,717, McFadden's R^2 = .26, Likelihood Ratio (LR) = 421.82 (p < .001), Akaike Information Criterion (AIC) = 1340.51, Bayesian Information Criterion (BIC) = 1735.63, and mean Variance Inflation Factor (VIF) = 1.36.

Figure 5

Burnout Prevalence Rate by Demographic Cohort



While several studies found that being married with children contributes to emotional exhaustion and burnout (e.g. Załuski & Makara-Studzińska, 2024), a similar relationship was not evident in this study. On the contrary, married persons were less likely to experience burnout than singles, and dependent care (child, elderly, or persons with disability or special needs) was non-significant as a predictor of burnout. This finding is similar to that reported by researchers

such as Lungulescu et al. (2022) and Zheng et al. (2022) who highlighted the role of marriage as a source of social–emotional support for married individuals. Other demographic variables such as gender, education, and income were found to be non-significant in predicting burnout prevalence but Permanent Residents were more likely to report experiencing burnout. This is likely due to their tendency to be in work that have high job demands (see below).

Job demands factors were significantly associated with higher burnout risks such as excessive overtime work (7.3 times more likely for those who work overtime all the time) and jobs that were highly complex and intense (1.6–1.8 times more likely). These findings provide evidence to support H2 which posits that higher job demands are associated with increased burnout risk. In addition, those working in financial and insurance activities, health and social services, and public administration and defence industries were less likely to experience burnout than workers in construction. Permanent Residents tend to work overtime compared to citizens (26.1% vs. 19% respectively work more than 50 hours per week) and engage in high-intensity jobs (54.7% vs. 43.7%) including construction work (7.9% vs. 3.9%).

Job resources factors were largely found to be non-significant, providing insufficient evidence to accept H3. These factors include job security (e.g. having a permanent job and good job prospects), work autonomy or job control, communication, and engagement. Having flexible work arrangements was non-significant in alleviating burnout, likely due to the need to meet task deadlines regardless of where, when, and how the work is done.

Workers with good physical and mental health were found to be less likely to experience burnout, providing evidence to support H5 which posits that better health is associated with lower burnout risk. High negative affect was associated with 2.3 times stronger likelihood of being burnt out. Those with strong work domain well-being and who were satisfied with their job, career, health, and financial adequacy were less likely to be burnt out, supporting H4. Interestingly, workers who were burnt out still evaluated their life positively (core well-being) on the whole.

Conclusion

Burnout has a tremendous impact on the lives of individuals and can have serious consequences on the physical and psychological health of workers. At the same time, having good physical and mental health can help to mediate feelings of physical and mental exhaustion. This study reinforces the JD–R theory by highlighting excessive working hours and highly intense and complex work as major contributors to burnout in Singapore. Moderating factors to burnout include social and family support especially among married individuals. Additionally, individuals with good physical and mental health were less likely to experience burnout, underscoring the crucial role of personal well-being in buffering against occupational stress.

The importance of individual and social factors highlights the need for preventive measures, early identification of burnout syndrome, and managing interventions in the work environment. One suggestion is for companies to implement policies to regulate excessive overtime work and the time pressure for work completion. This can help to set clear boundaries for work and rest time and help to promote work-life harmony. In addition, having a strong peer and social support network can alleviate burnout and encourage teamwork. Companies can leverage technology by using AI and automated systems to ease administrative burdens, support workers to be productive in their work, and alleviate excessive overtime. For instance, AI-powered scheduling tools can help to optimise meeting times and task allocations, and reduce time conflicts and overcommitments (Henkin, 2023).

Building resilience is another key strategy. Providing workers with resilience training on proactive coping strategies, planning and decision making, and how to provide peer and supervisor psychological support can empower workers to navigate workplace stressors more effectively. However, resilience training should not be seen as a substitute for addressing systemic issues. Rather, it should complement systemic interventions, ensuring that individual coping strategies are supported by a healthy and sustainable work environment. This dual approach recognises that while personal resilience is important, a supportive organisational context, such as fair workload distribution, supportive leadership, and psychologically safe

workplaces, is equally critical for sustaining well-being. Companies that prioritise both resilience training and systemic improvements can benefit from a workforce that exhibits high well-being, commitment, and productivity. In this regard, resources and opportunities for training and funding assistance can be identified to augment job resources and manage job demands.

This research has certain limitations. First, the survey was conducted through convenience sampling which can affect the representativeness of the results for the whole population. Convenience sampling may overrepresent certain groups, particularly highly educated workers in professional and service industries, while underrepresenting manual labourers and workers from industries like manufacturing and construction. Second, there is potential for self-selection bias due to the use of an online survey platform, which may disproportionately attract respondents who are more comfortable with digital tools or more engaged in survey topics, possibly excluding less tech-savvy or less motivated individuals. Hence, these findings should be interpreted with caution, as they may not fully reflect the experiences of the broader workforce in Singapore especially those below 21 years who are not within the sampling frame. Nevertheless, convenience sampling such as this can be executed with speed, low cost, and relative ease. Moreover, the current sample is a large and fairly well-distributed one across demographic cohorts, and is close to the national labour force distribution for job-related variables (e.g. income, occupation, and industry) which are the focus of this study.

This study contributes towards the understanding of the less researched area of burnout prevalence in Singapore. Future studies can examine the effects of coping strategies and the long-term consequences of burnout using more representative sampling methods. A deeper investigation into how workplace interventions can alleviate burnout would provide valuable insights for policymakers and organisations. This includes de-implementing unnecessary or multiple requirements for documentation, optimising task allocations by avoiding time conflicts and overcommitments through the use of AI-powered workload management tools, and providing a strong peer and social support network within organisations.

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REFERENCES

Bharathi, S. K. S., & Sujatha, S. (2024). Healthcare employee well-being and work-related stress factors: Evaluating the mediating influence of perceived organisational support. *Qubahan Academic Journal*, *4*(3), 209–225. https://doi.org/10.48161/qaj.v4n3a626

Brotheridge, C. M., & Grandey, A. A. (2002). Emotional labor and burnout: Comparing two perspectives of "people work". *Journal of Vocational Behavior*, *60*(1), 17–39. https://doi.org/10.1006/jvbe.2001.1815

Cho, H., Pyun, D. Y., & Wang, C. K. J. (2023). Teachers' work-life balance: The effect of work-leisure conflict on work-related outcomes. *Asia Pacific Journal of Education*. https://doi.org/10.1080/02188791.2023.2259113

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203771587

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

Dolan, E. D., Mohr, D., Lempa, M., Joos, S., Fihn, S. D., Nelson, K. M., & Helfrich, C. D. (2015). Using a single item to measure burnout in primary care staff: A psychometric evaluation. *Journal of General Internal Medicine*, *30*, 582–587. https://doi.org/10.1007/s11606-014-3112-6

Elloy, D., & Patil, V. (2012). Exploring the relationship between organization-based self esteem and burnout: A preliminary analysis. *International Journal of Business and Social Science*, *3*(9), 283–288. https://ijbssnet.com/journal/index/1252

Elo, A. L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. *Scandinavian Journal of Work, Environment and Health*, *29*(6), 444–451. https://doi.org/10.5271/sjweh.752

Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Advanced Nursing*, *77*(8), 3286–3302. https://doi.org/10.1111/jan.14839

Galanti, T., Guidetti, G., Mazzei, E., Zappalà, S., & Toscano, F. (2021). Work from home during the COVID-19 outbreak: The impact on employees' remote work productivity, engagement, and stress. *Journal of Occupational and Environmental Medicine*, *63*(7), e426–e432. https://doi.org/10.1097/JOM.0000000000002236

Hagan, G., Okut, H., & Badgett, R. G. (2024). A systematic review of the single-item burnout question: Its reliability depends on your purpose. *Journal of General Internal Medicine*, *39*(5), 818–828. https://doi.org/10.1007/s11606-024-08685-y

Henkin, D. (2023, September 27). Combating employee burnout with AI and future of work policies. *Forbes*. https://www.forbes.com/sites/davidhenkin/2023/09/27/combating-employee-burnout-with-ai-and-future-of-work-policies/

International Labour Organization. (2025). ILO modelled estimates database, ILOSTAT [database]. Available from https://ilostat.ilo.org/data/

Jalili, M., Niroomand, M., Hadavand, F., Zeinali, K., & Fotouhi, A. (2021). Burnout among healthcare professionals during COVID-19 pandemic: A cross-sectional study. *International Archives of Occupational and Environmental Health*, *94*, 1345–1352. https://doi.org/10.1007/s00420-021-01695-x

Koh, M. Y. H., Chong, P. H., Neo, P. S. H., Ong, Y. J., Yong, W. C., Ong, W. Y., Shen, A. Y. M., & Hum, A. Y. M. (2015). Burnout, psychological morbidity and use of coping mechanisms among palliative care practitioners: A multi-centre cross-sectional study. *Palliative Medicine*, *29*(7), 633–642. https://doi.org/10.1177/0269216315575850

Leiter, M. P., & Robichaud, L. (1997). Relationships of occupational hazards with burnout: An assessment of measures and models. *Journal of Occupational Health Psychology*, *2*(1), 35–44. https://doi.org/10.1037/1076-8998.2.1.35

Lungulescu, C. V., Turcu-Stiolica, A., Lungulescu, C., Dumitrescu, E. A., Turcu-Stiolica, R. A., Croitoru, V. M., Cazacu, I.-M., Gheorghe, A.-S., Stanculeanu, D.-L., & Sur, D. (2022). How much burnout and coping influence quality of life among young oncology providers in Romania during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *19*(9), Article 5508. https://doi.org/10.3390/ijerph19095508

Makara-Studzińska, M., Golonka, K., & Izydorczyk, B. (2019). Self-efficacy as a moderator between stress and professional burnout in firefighters. *International Journal of Environmental Research and Public Health*, *16*(2), Article 183. https://doi.org/10.3390/ijerph16020183

Marchand, A., Blanc, M. E., & Beauregard, N. (2018). Do age and gender contribute to workers' burnout symptoms? *Occupational Medicine*, *68*(6), 405–411. https://doi.org/10.1093/occmed/kqy088

Maslach, C., Leiter, M. P., & Jackson, S. E. (2012). Making a significant difference with burnout interventions: Researcher and practitioner collaboration. *Journal of Organizational Behavior*, *33*(2), 296–300. https://doi.org/10.1002/job.784

Ministry of Health. (2024). *Population and vital statistics*. https://www.moh.gov.sg/others/resources-and-statistics/population-and-vital-statistics

Ministry of Manpower. (2023). *Written answer to PQ on increase in retirement and re-employment ages*. https://www.mom.gov.sg/newsroom/parliament-questions-and-replies/2023/0918-written-answer-to-pq-on-increase-in-retirement-and-re-employment-ages

Ministry of Manpower. (2024). *Labour force in Singapore 2024* (Annual Report on Labour Force in Singapore). https://stats.mom.gov.sg/Pages/Labour-Force-In-Singapore-2024.aspx

Nagarajan, R., Ramachandran, P., Dilipkumar, R., & Kaur, P. (2024). Global estimate of burnout among the public health workforce: A systematic review and meta-analysis. *Human Resources for Health*, *22*(1), Article 30. https://doi.org/10.1186/s12960-024-00917-w

National Trades Union Congress & Singapore University of Social Sciences-Institute for Adult Learning. (2025). *Well-being of workers in Singapore* [Manuscript in preparation].

Organisation for Economic Cooperation and Development. (2013). *OECD guidelines on measuring subjective well-being*. OECD Publishing.

Organisation for Economic Cooperation and Development. (2025). OECD Data Explorer [database]. Available from https://data-explorer.oecd.org/

Randstad Singapore. (2022). *Reimagine work: Managing shifts in talent expectations* (White Paper). https://www.randstad.com.hk/s3fs-media/hk/public/2022-10/randstad-hong-kong-reimagine-work-talent-expectations-white-paper.pdf

Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & De Andrade, S. M. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PLOS ONE*, 12(10), Article e0185781. https://doi.org/10.1371/journal.pone.0185781

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, *25*(3), 293–315. https://doi.org/10.1002/job.248

Schaufeli, W. B., Leiter, M. P., & Maslach, C. (2009). Burnout: 35 years of research and practice. *Career Development International*, *14*(3), 204–220. https://doi.org/10.1108/13620430910966406

Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43–68). Springer. https://doi.org/10.1007/978-94-007-5640-3_4

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C. C., & Luszczynska, A. (2016). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress, and Coping*, *29*(4), 367–386. https://doi.org/10.1080/10615806.2015.1058369

Singapore named most overworked country in APAC. (2022). *Singapore Business Review*. https://sbr.com.sg/hr-education/in-focus/singapore-named-most-overworked-country-in-apac

Singapore ranks 32 out of 40 for work-life balance, second most overworked city globally. (2019, August 8). *Today*. https://www.todayonline.com/singapore/singapore-ranks-32-out-40-work-life-balance-second-most-overworked-city

Tan, K. H., Lim, B. L., Foo, Z., Tang, J. Y., Sim, M., Lee, P. T., & Fong, K. Y. (2022). Prevalence of burnout among healthcare professionals in Singapore. *Annals Academy of Medicine Singapore*, *51*(7), 409–416. https://doi.org/10.47102/annals-acadmedsg.2021338

World Health Organization. (2019). Burn-out an "occupational phenomenon": International Classification of Diseases. *World Health Organization News.* https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases

Yin, C., Ji, J., Cao, X., Jin, H., Ma, Q., & Gao, Y. (2023). Impact of long working hours on depressive symptoms among COVID-19 frontline medical staff: The mediation of job burnout and the moderation of family and organizational support. *Frontiers in Psychology*, *14*, Article 1084329. https://doi.org/10.3389/fpsyg.2023.1084329

Zalizan, T. (2025, March 7). 'I was simply too tired': Singaporeans burnt out from long hours, working on days off and unreasonable bosses. *CNA*. https://www.channelnewsasia.com/today/ground-up/i-was-simply-too-tired-singaporeans-burnt-out-long-hours-working-days-and-unreasonable-bosses-4983986

Załuski, M., & Makara-Studzińska, M. (2024). Having children and being married are predictors of burnout and obesity among working men: Effects of latent profile analysis. *Inquiry*, *61*, 1–15. https://doi.org/10.1177/00469580241229642

Zheng, G., Lyu, X., Pan, L., & Chen, A. (2022). The role conflict-burnout-depression link among Chinese female health care and social service providers: The moderating effect of marriage and motherhood. *BMC Public Health*, *22*, Article 230. https://doi.org/10.1186/s12889-022-12641-y

Motivating Training Transfer and Enhancing Work Outcomes: Does Supervisor's Training Support Matter?

Ai Noi Lee

Abstract

In today's fast-paced global economy, organisations are increasingly investing in continuing education to upskill and reskill employees to enhance workplace productivity and meet evolving business demands. The effectiveness of these efforts largely depends on workplace support, particularly from supervisors. Understanding the critical role supervisors play in facilitating training transfer and enhancing employee effectiveness is vital. This study examined employees' perception of their supervisors' training support and its relationships with their training transfer motivation, training transfer, change readiness, and job satisfaction. Using a convenience sample of 297 working individuals who attended continuing education courses in Singapore, the study employed path analysis to examine these relationships. Results revealed that perceived supervisor's training support directly and positively predicted training transfer motivation and job satisfaction. Training transfer motivation, in turn, directly and positively predicted training transfer, change readiness, and job satisfaction. This also indicated that training transfer motivation acted as a mediator, fully mediating the relationships between perceived supervisor's training support and both training transfer and change readiness, while partially mediating its relationship with job satisfaction. The findings of this study highlighted the pivotal role of supervisor support in enhancing employees' motivation and ability to transfer training into the workplace. It is therefore crucial to equip supervisors with the skills and resources needed to effectively engage employees in training and facilitate training transfer to drive both individual and organisational growth.

Introduction

The contemporary workplace operates within a VUCA environment, defined by volatility, uncertainty, complexity, and ambiguity, where rapid technological advancements, shifting market dynamics, and evolving organisational structures have become the norm (Achoki, 2023; Hamid, 2019; A. N. Lee & Nie, 2024). Also, as highlighted in the World Economic Forum's *Future of Jobs Report 2023* (Di Battista et al., 2023), ongoing technological innovations and global economic shifts are continuously reshaping job requirements and workplace demands. This VUCA landscape necessitates not only technical expertise but also resilience, adaptability, and a commitment to lifelong learning, which are key attributes for maintaining individual employability and fostering organisational competitiveness (Goulart et al., 2022; A. N. Lee & Nie, 2024; Lim et al., 2024). In response to these changes, organisations must implement agile strategies to empower employees to acquire, apply, and adapt new skills effectively (Schlegel & Kraus, 2023; Schoemaker et al., 2018). Notably, employees' proactive engagement in continuous training and development is vital in addressing workplace demands and sustainable employability (Boxall et al., 2019; A. N. Lee & Nie, 2024).

Globally, governments and organisations recognise the urgency of equipping employees with future-ready skillsets and growth-oriented mindsets to navigate evolving economic challenges (Di Battista et al., 2023; Gog et al., 2024; A. N. Lee & Nie, 2024). In Singapore, the government recognises the critical importance of upskilling and reskilling to ensure a sustainable workforce (Gog et al., 2024; A. N. Lee & Nie, 2024). The present Continuing Education and Training (CET) system, established in 2003, represents a pivotal step taken by the Singapore government in fostering a skilled workforce through lifelong learning (Loh & Yeo, 2024; Sung, 2011; Tan, 2017). Initially focused on addressing industry-specific needs, the CET system has evolved into a comprehensive framework supporting career transitions and skills development across various sectors and stages of professional growth (Fung, 2020; Lim et al., 2024; Loh & Yeo, 2024; Sung, 2011). Key milestones in the CET system's evolution include the establishment of the Workforce Development Agency, which laid the foundation for developing modular, stackable qualifications that align with the Singapore Workforce Skills Qualifications framework (Bound & Chen, 2022; Bound & Lin, 2010). The SkillsFuture movement, launched in 2015, integrates CET strategies with individual-centric learning pathways, offering workers access to resources such as SkillsFuture Credit and sector-specific training programmes (Bound & Chen, 2022; Loh & Yeo, 2024). To better meet the diverse needs of individuals across various career stages, Singapore's CET ecosystem emphasises tailored solutions and fosters cross-sector adaptability, equipping workers with skills to navigate dynamic job markets while aligning their growth with long-term economic goals (Bound & Chen, 2022; Lim et al., 2024). In recent years, enhancements such as the SkillsFuture Career Transition Programmes have offered targeted support for midcareer individuals, while the SkillsFuture Work-Study Programmes have bridged the gap between education and employment for younger workers (Chia & Sheng, 2022; Gog et al., 2024; Lim et al., 2024). Moreover, the Lifelong Learning Institute and the National Trades Union Congress's Employment and Employability Institute have been established to facilitate workers' skills upgrading and offer career guidance. These structured efforts underscore Singapore's commitment to creating a robust CET ecosystem by blending targeted industry training with accessible learning pathways to ensure that workers remain agile and equipped to meet the demands of a rapidly changing global economy (Bound & Chen, 2022; Chia & Sheng, 2022; Lim et al., 2024).

While a robust nation-wide CET system is valuable, employees' effective transfer of newly acquired skills to the workplace also depends on a supportive environment that fosters learning and application (Blume et al., 2010, 2019; Pangaribuan et al., 2020). Scholars have opined that workplace environments can either enhance or hinder training motivation and transfer (Blume et al., 2019; A. N. Lee et al., 2024). Supportive workplace conditions, such as access to adequate resources and opportunities for skill application, are likely to enhance employee motivation for training transfer, whereas constraints can adversely affect their motivation and training transfer experiences (Blume et al., 2010; A. N. Lee et al., 2024). Research has reported that differences in workplace support can influence workers' motivation to transfer skills and their ability to overcome challenges in applying training outcomes (Almannie, 2015; Baldwin & Ford, 1988; Caesens & Stinglhamber, 2014; Gegenfurtner et al., 2009). Therefore, understanding the factors

affecting employees' training transfer and adaptive work outcomes is critical for optimising employee growth and workplace productivity. Additionally, the instrumental role of supervisor support in shaping employees' motivation and capability to transfer training to the workplace is underexplored, especially in the Singapore context.

To provide clearer insights to inform research and practice, this study examined employees' perception of supervisor's training support and its relationships with their training transfer motivation, training transfer, change readiness, and job satisfaction among a sample of working adults in Singapore.

Integrating Theoretical Perspectives of Social Exchange Theory and Social Cognitive Theory in Understanding Training Support and Transfer

Supervisors are instrumental in offering training support and enabling employees to transfer training effectively (Chiaburu & Marinova, 2005). The connection between supervisor training support and key workplace outcomes can be understood through the lenses of Social Exchange Theory (SET) and Social Cognitive Theory (SCT). SET suggests that employees reciprocate perceived organisational support with greater loyalty, engagement, and performance (Blau, 1964; Cropanzano & Mitchell, 2005). Grounded in the norm of reciprocity, SET posits that when employees recognise strong organisational support, such as access to training opportunities and resources, they develop a sense of obligation toward the organisation (Cropanzano & Mitchell, 2005; Settoon et al., 1996). This fosters a cycle of mutually beneficial exchanges, where employees' effective work practices align with organisational objectives, ultimately enhancing workplace relationships and outcomes (Settoon et al., 1996). In the context of training support and transfer, supervisor's training support reflects an organisational commitment to employee development and is likely to be perceived by employees as the organisation's overall support for their professional growth and work recognition (Chiaburu et al., 2010), thus creating a sense of obligation among employees to reciprocate through enhanced training transfer, adaptability, and productivity (C. H. Lee & Bruvold, 2003). In other words, employees who perceive their organisations as actively supporting their training and transfer are more likely to apply newly acquired knowledge and skills to their job roles, contributing to improved work processes and overall workplace effectiveness (Hariadi & Muafi, 2022; Merdiaty et al., 2022; Steele-Johnson et al., 2010).

Complementing SET, Bandura's (1986) SCT emphasises the roles of observational learning, self-efficacy, and behavioural reinforcement in shaping individual actions. In the context of training support at the workplace, supervisors play a pivotal role by reinforcing the relevance of training, providing resources, and guiding employees through the learning process (Cunningham et al., 2002; A. N. Lee et al., 2020). Supervisor's training support thus functions as both a role model and a resource, demonstrating how to effectively incorporate training into workplace practices (Chiaburu & Marinova, 2005; A. N. Lee et al., 2020). Research has reported that employees who receive adequate training and coaching from supervisors are more likely to apply their learnt knowledge and skills on the job, leading to improved work performance (Blume et al., 2019; A. N. Lee et al., 2020; Shen & Tang, 2018). Likewise, supervisors who demonstrate confidence in training outcomes and offer constructive feedback are likely to enhance employees' self-efficacy and foster their willingness to implement newly acquired skills. Conversely, when employees perceive their organisations or supervisors as unsupportive, particularly when encountering barriers to skill application, they are less likely to transfer training effectively (D'Annunzio-Green & Barron, 2019). Understanding these dynamics is crucial for developing effective interventions to improve training transfer and workplace effectiveness. SET emphasises the relational and reciprocal aspects of supervisor support, while SCT sheds light on the cognitive and behavioural mechanisms underlying employees' actions. The integration of SET and SCT therefore provides a comprehensive framework for understanding how supervisor's training support facilitates employees' cognitive and motivational processes, enhancing their adaptability to effectively meet job demands while sustaining job satisfaction.

Relationship Between Perceived Supervisor's Training Support and Training Transfer Motivation

In the existing literature, training transfer motivation is often defined as an individual's intent or willingness to apply the knowledge and skills gained during training to their job (Noe, 1986). It reflects the extent to which employees are driven to use their training to address work-related challenges, improve productivity, and achieve performance goals (Gegenfurtner et al., 2009; Kraiger & Ford, 2021). This intrinsic motivation serves as a key predictor of successful training transfer, with research consistently demonstrating its significant and positive impact on the actual application of learnt skills in the workplace (Burke & Hutchins, 2007; Chung et al., 2022; Gegenfurtner et al., 2009; Reinhold et al., 2018). Often, effective support fosters a culture of continuous learning and development, which tends to enhance employees' motivation to transfer training (Blume et al., 2010; A. N. Lee et al., 2024; Maggi-da-Silva et al., 2022; Salamon et al., 2021). Hence, supporting employees' training and the transfer of acquired skills is a fundamental component of effective human resource management and is critical to organisational success (Burke & Hutchins, 2007).

Numerous scholars have opined that supervisors play a pivotal role in bridging the gap between training activities and workplace application, enabling employees to translate newly acquired skills and knowledge into workplace practice (Blume et al., 2010; Chiaburu & Marinova, 2005; Chiaburu et al., 2010). For instance, Chiaburu and Marinova (2005) described supervisor's training support as actions that encourage participation in training activities and assist employees in integrating new knowledge into their work environment. Similarly, Blume et al. (2010) emphasised supervisor support as a critical factor in the transfer of training, highlighting actions such as goal setting, providing feedback, and creating opportunities for employees to apply their training. By fostering psychological safety, encouraging collaboration, and offering constructive feedback, supervisors not only enhance employees' confidence and willingness to apply their skills but also drive workplace productivity and innovation (Aiyoob et al., 2025; Guan & Frenkel, 2019; A. N. Lee et al., 2020). In this study, perceived supervisor's training support is defined as employees' perception of their supervisor's efforts to provide the necessary support, encouragement, and resources to facilitate participation in training activities and the application of acquired knowledge and skills in their work roles (Chiaburu & Marinova, 2005; Holton et al., 2000; Saks & Burke, 2012).

Research consistently highlights perceived supervisor's training support as a key predictor of employees' motivation to transfer training into workplace practices (Chiaburu & Marinova, 2005; A. N. Lee et al., 2024). When employees perceive their supervisors as supportive, through supervisors' actions such as offering constructive feedback, setting clear expectations, and creating opportunities to practice newly acquired skills, they are more likely to feel confident and motivated to apply their training (Chiaburu & Marinova, 2005; Saks & Burke, 2012). Supervisors who engage in discussions about the relevance of training and provide tangible resources foster a sense of capability and purpose in employees, further enhancing their motivation to utilise newly learnt skills (Blume et al., 2010; Hughes et al., 2020). Additionally, supportive behaviours such as mentoring and offering post-training guidance reinforce employees' belief in the value of training, which leads to higher engagement and motivation to transfer learning into their roles (Burke & Hutchins, 2007; Govaerts & Dochy, 2014; Grossman & Salas, 2011). These findings collectively demonstrate that supervisors play a pivotal role in fostering training transfer motivation and subsequent training transfer.

Hypothesis 1: Perceived supervisor's training support would positively predict training transfer motivation.

Relationship Between Training Transfer Motivation and Training Transfer

Effective training transfer is critical for achieving desired organisational outcomes, as it ensures that investments in training result in tangible improvements in employee productivity and performance (Blume et al., 2010; Ford et al., 2018). In this study, training transfer refers to the extent to which employees apply the knowledge and skills acquired during training to their job roles (Baldwin et al., 2009; Burke & Hutchins, 2007), including the generalisation, maintenance,

and effective utilisation of these competencies to improve job performance (Blume et al., 2010; Grossman & Salas, 2011). Several empirical studies have reported the relationship between training transfer motivation and training transfer in various contexts.

For instance, Chiaburu et al. (2010) conducted a longitudinal field study with 111 employees from a large U.S. organisation and found that training transfer motivation (assessed during training) significantly predicted actual transfer (assessed 2–3 months after training). This study highlighted the role of sustained motivation in ensuring the effective application of training content. Likewise, Na-Nan and Sanamthong (2020) analysed the data from 250 university alumni in Thailand and reported a strong positive correlation between motivation to transfer and actual training transfer. Their findings emphasised the importance of fostering motivation, particularly in educational and early career settings, to enhance the application of acquired skills. More recently, Salamon et al. (2021) studied a sample of 311 trainees from eight mid-to-large-sized Hungarian companies who participated in open skills training programmes, such as leadership development. Their findings reinforced the direct positive relationship between transfer motivation and perceived training transfer, further emphasising that trainees who are motivated are more likely to apply their new skills effectively in their job roles. In another study, Andoh et al. (2024) analysed data obtained from a sample of respondents who attended various training programmes across different organisations in different countries to examine the influence of motivation to transfer on training transfer and their result indicated that motivation to transfer positively influenced training transfer.

Hypothesis 2: Training transfer motivation would positively predict training transfer.

Relationship Between Training Transfer Motivation and Change Readiness

In this study, change readiness is defined as an individual's positive behavioural intention toward workplace change, marked by a willingness to invest effort in or support the change process (Stoffers & Mordant-Dols, 2015; Thakur & Srivastava, 2018). This readiness often emerges when employees trust the intentions behind the change and have confidence in their organisation's ability to implement it effectively (Cunningham et al., 2002; Matthysen & Harris, 2018; Stoffers & Mordant-Dols, 2015; Vakola, 2014). So far, research that has directly examined the relationship between training transfer motivation and change readiness remains limited. Among the few studies, Asim et al. (2012) found a positive relationship between training and development initiatives and change readiness in their study that involved 100 call centre employees from Pakistan's telecom sector. In another study, Mansour et al. (2022) investigated 451 employees across 16 banks in Jordan and found that perceived training benefits and management support positively predicted change readiness. Despite these contributions, neither Asim et al. (2012) nor Mansour et al. (2022) directly explored the link between training transfer motivation and change readiness. This gap underscores the importance of exploring how training transfer motivation influences employees' readiness for organisational and workplace changes. Gaining a deeper understanding of this relationship could offer organisations valuable insights into fostering employee adaptability and responsiveness to change initiatives, thereby enhancing overall organisational effectiveness.

Hypothesis 3: Training transfer motivation would positively predict change readiness.

Relationship Between Training Transfer Motivation and Job Satisfaction

According to Brayfield and Rothe (1951), job satisfaction is defined as an individual's overall affective or emotional orientation toward their job which also reflects the degree to which the individual feels favourably or unfavourably about their work. As a key construct in organisational psychology, job satisfaction has been extensively studied with various antecedents, including compensation, work environment, organisational culture, and career development opportunities (Arifin, 2015; Choiriyah & Riyanto, 2021; Naz & Sharma, 2017). However, the study of training transfer motivation as an antecedent of job satisfaction has received relatively little attention.

Despite limited research, existing studies have highlighted that possessing the right competencies for a specific job significantly contributes to job satisfaction (Arifin, 2015; Choiriyah & Riyanto, 2021). Furthermore, applying newly acquired skills can provide fresh perspectives that enhance employees' existing capabilities, further elevating their job satisfaction (Zumrah et al., 2013). Drawing on perspectives from SET, employees who perceive that they are provided with adequate opportunities and resources to apply the skills learnt through training are more likely to feel valued and competent. This perception can foster a sense of reciprocity, leading to positive job attitudes, including higher levels of satisfaction (Blau, 1964). When employees are motivated to transfer training into their work roles, they are more likely to experience enhanced personal fulfilment and job satisfaction (C. H. Lee & Bruvold, 2003). This interplay between training transfer motivation and job satisfaction is therefore vital for organisations seeking to boost employee performance, engagement, and retention.

Hypothesis 4: Training transfer motivation would positively predict job satisfaction.

Mediating Role of Training Transfer Motivation

Although training transfer motivation has received considerable attention for its role in explaining the underlying motivational processes in training transfer research, findings regarding its function as a mediating variable remain inconsistent. For instance, in a study involving 194 employees from 34 teams participating in whole-team training interventions, Massenberg et al. (2015) found that motivation to transfer not only enhanced training transfer but also mediated the relationship between social support and training transfer. Similarly, Iqbal and Dastgeer (2017) examined 215 participants and reported that motivation to transfer mediated the relationship between self-efficacy, training retention, and transfer of training. Junça Silva and Pinto (2024) also demonstrated that motivation to transfer significantly mediated the relationship between colleagues' and supervisors' support and performance, as well as adaptability and performance, in a sample of 291 healthcare workers from a Portuguese institution. Conversely, Muduli and Raval (2018) found no mediating effect of transfer motivation between work context factors (e.g. supervisory support, peer support, opportunities to apply skills, and performance coaching) and training transfer. These mixed results suggest a need to reexamine this construct to establish clearer insights for future research and practice.

Furthermore, in organisational psychology research, mediating variables are recognised for enhancing theoretical frameworks by providing a process-oriented perspective (Hayes, 2013). They elucidate the mechanisms through which independent (predictor) variables influence dependent (criterion) variables, thereby offering deeper insights into the relationships between constructs in organisational contexts (Baron & Kenny, 1986). By uncovering such processes, researchers can develop more efficient and impactful interventions that focus on variables within the mediating process, thereby bridging theoretical constructs with practical applications (MacKinnon et al., 2007). In this study, we explored the mediating role of training transfer motivation within a Singapore sample, building on its significance as highlighted in the training transfer research in other contexts.

Hypothesis 5: Training transfer motivation would mediate the relationship between perceived supervisor's training support and training transfer as well as change readiness and job satisfaction.

Method

Research Sample

A convenience sample of 297 participants who attended short-term continuing education courses in Singapore voluntarily participated in this study. The participants enrolled in a diverse range of courses across various sectors (e.g. online marketing, graphic design, education, counselling, technology, human resources development, and general management). Among the participants, 65.7% were female and 34.3% were male. The age range of the participants was

21–65 years, with 84.9% of them aged between 26 years and 50 years. Also, 43.8% of them were single, 53.2% of them were married, and 3% of them were divorced. Majority of the participants (88.9%) possessed a bachelor's degree or higher academic qualification. All the participants were full-time employees in various industries, with 68.4% of them working in the services industry, 7.1% in the manufacturing industry, and the rest in other industries. Moreover, 37.3% of them had less than 10 years of working experience, 57.3% had between 10 years and 29 years of working experience, and 5.4% had a working experience of 30 years or more.

Measures

To ensure the validity and applicability of the scale items in the Singapore CET context, the study incorporated both newly developed items and items adapted from existing measures. During the instrument development stage, four content experts from the field (two researchers and two practitioners) were invited to provide feedback on the scale items prior to data collection. After the data was collected, a series of exploratory and confirmatory factor analyses (EFA and CFA) were conducted to further assess whether the items measuring each variable remained valid and distinct. As suggested by methodologists (e.g. Comrey, 1988; Floyd & Widaman, 1995; Worthington & Whittaker, 2006), three recommendations were considered in EFA for the selection and retention of items: (a) retain EFA factor loadings more than .40; (b) retain items without cross-loadings across factors; and (c) ensure conceptual consistency with other items on the factor. To determine the number of factors to retain, three recommendations were also adopted (e.g. Noar, 2003; Teo, 2010; Worthington & Whittaker, 2006): (a) Kaiser's (1960) rule of retaining the eigenvalues greater than 1 (K1); (b) Cattell's (1966) scree test; and (c) conceptual interpretability. Based on EFA, the five main variables demonstrated a distinct five-factor structure that accounted for 77.15% of the total variance. CFA was next conducted to further verify the five-factor structure. CFA model fit was assessed by a number of indices (i.e. Chi square, χ^2; degrees of freedom, *df*; Tucker–Lewis index, TLI; comparative fit index, CFI; and root-mean-square error of approximation, RMSEA) as recommended by methodologists (e.g. Hair et al., 2006; Hu & Bentler, 1999; Kline, 2005). The CFA results indicated that the five-factor structure demonstrated a good model-data fit: $\chi^2(df = 242, N = 297) = 458.59$, $p < .001$, TLI = 0.96, CFI = .96, and RMSEA = .06. Appendix A presents the factor loadings of EFA and CFA of the five main variables of study, and Appendix B presents the final items used in the study.

Perceived Supervisor's Training Support consisted of six items. Initially, as no known directly relevant scale was available to measure the perceptions of supervisor's training support in the context of this study, items were adapted from two validated sources: Line Management Support (Santos & Stuart, 2003) and Transfer Climate (Burke & Baldwin, 1999). Following a series of analyses (EFA and CFA), a stable one-factor structure was obtained with six items retained, three items from Line Management Support and three items from Transfer Climate. Cronbach's alpha coefficient was α = .94.

Training Transfer Motivation consisted of five items adapted from Volition-to-Transfer scale developed by Seiberling and Kauffeld (2017). Cronbach's alpha coefficient was α = .90.

Training Transfer consisted of four newly developed items designed to suit the context of this study, measuring self-reported perception of applying knowledge and skills from the training context to work practice. Due to the absence of a directly relevant scale for measuring self-reported training transfer, five items were initially developed, but only four were retained after EFA and CFA. For instance, participants were asked to indicate the extent to which they were able to apply the knowledge and skills covered in the course to their job and how frequently they had used the knowledge and skills covered in the course in their job. Data for this variable was collected 3–4 months after participants had completed the course. Cronbach's alpha coefficient was α = .88.

Change Readiness consisted of four items adapted from the Readiness to Change measure developed by Thakur and Srivastava (2018). Cronbach's alpha coefficient was α = .90.

Job Satisfaction consisted of five items adapted from the job satisfaction scale developed by Brayfield and Rothe (1951). Cronbach's alpha coefficient was α = .95.

Data Collection Procedure

Ethics approval was sought from our institution prior to data collection. A research advertisement flyer was used to publicise the research study to potential participants to invite them to participate in the research. Data were then collected through the administration of a structured questionnaire. A cover letter which explained the objectives of the study was attached to the questionnaire. Informed consent was obtained from each participant prior to data collection and confidentiality of participation was assured. In the questionnaire, participants provided their demographic information and Likert scale ratings on the variables measured (i.e. Perceived Supervisor's Training Support, Training Transfer Motivation, Change Readiness, and Job Satisfaction). A 7-point Likert scale ranging from "1" indicating "Strongly Disagree" to "7" indicating "Strongly Agree" was used to collect participants' responses to each item of the five main variables. Completed questionnaires were collected from the participants within 1 week of completing the course. Participants' responses on "Training Transfer" were subsequently collected 3–4 months after the completion of the course. Incentive in the form of vouchers was given to each participant who took part in the research.

Analyses and Results

Means, Standard Deviations, and Bivariate Correlations

Table 1

Means, Standard Deviations, and Bivariate Correlations Among the Variables of Study (N = 297)

Main Variables	*M*	*SD*	Bivariate Correlation (*r*)				
			1	2	3	4	5
1. Perceived Supervisor's Training Support	4.3	1.4	1				
2. Training Transfer Motivation	5.8	0.8	.30**	1			
3. Training Transfer	4.8	1.3	.20**	.53**	1		
4. Change Readiness	5.6	0.8	.16**	.39**	.16**	1	
5. Job Satisfaction	5.2	1.1	.41**	.35**	.25**	.45**	1

Note. ** denotes the correlation is significant at $p < .01$. A 7-point Likert scale ranging from "1" indicating "Strongly Disagree" to "7" indicating "Strongly Agree" was used to collect participants' response to each item of the five main variables.

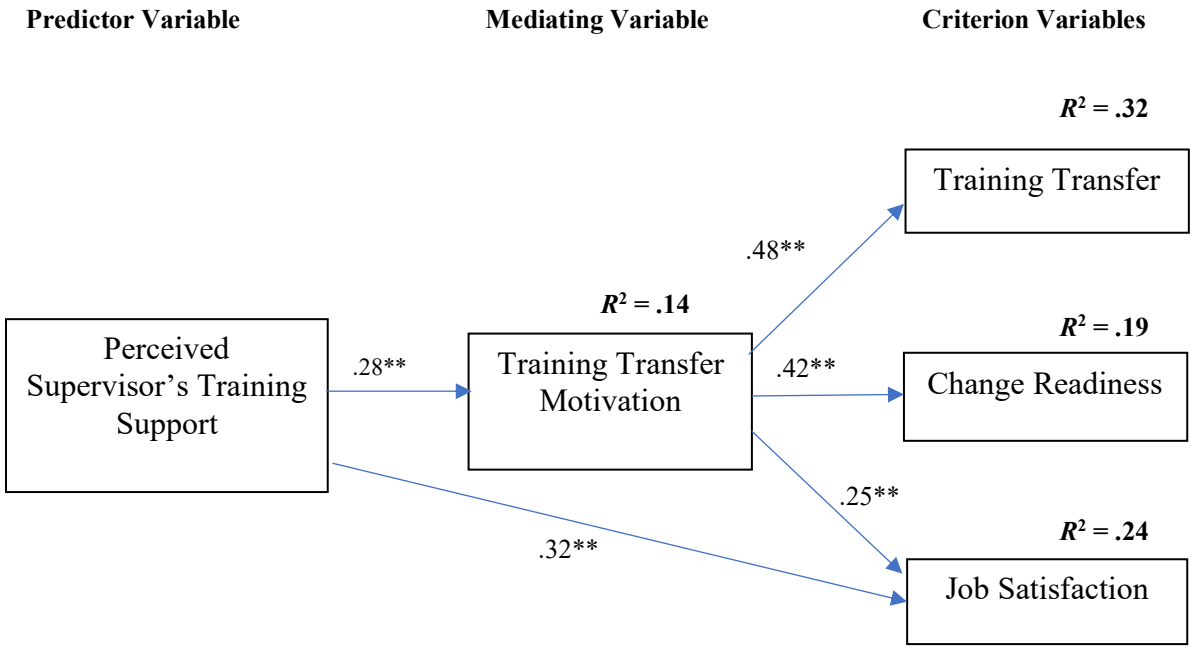
Path Analysis

Path analysis was conducted to examine the predictive relationships among the main variables of this study. The predictor variable was "Perceived Supervisor's Training Support" and the mediating variable was "Training Transfer Motivation". The criterion variables were "Training Transfer", "Change Readiness", and "Job Satisfaction". Demographic variables such as age range, marital status, working experience, income range, source of training sponsorship, and how soon they would apply the training to current work were entered in the path analysis as control variables because they were found to be correlated with the main variables of this study.

A very good model-data fit was obtained from the path analysis: $\chi^2(df = 26, N = 297) = 34.47$, $p = .123$, TLI = .98, CFI = .99, and RMSEA = .03. Figure 1 presents the path model.

Figure 1

Path Analysis Results Showing the Significant Predictive Relationships Among the Variables of the Study



Note. ** denotes predictive relationship significant at $p < .01$.

Results from the path analysis indicated that perceived supervisor's training support positively and significantly predicted motivation to transfer training (β = .28, $p < .01$). Results also indicated that training transfer motivation positively and significantly predicted training transfer (β = .48, $p < .01$), change readiness (β = .42, $p < .01$), and job satisfaction (β = .25, $p < .01$). Therefore, Hypotheses 1–4 were supported.

Additionally, training transfer motivation was found to fully mediate the relationships between perceived supervisor's training support and training transfer as well as change readiness. However, a direct and positive relationship was found between perceived supervisor's training support and job satisfaction (β = .32, $p < .01$). As such, training transfer motivation was found to partially mediate the relationship between perceived supervisor's training support and job satisfaction. Hypothesis 5 was partially supported.

Discussion

The findings of this study highlighted the critical role supervisors play in supporting employees' training transfer motivation, which could significantly impact employees' ability to transfer training effectively and enhance their change readiness and job satisfaction. This aligns with the findings of several scholars (Blume et al., 2010; Burke & Hutchins, 2007; Grossman & Salas, 2011), who emphasised that supervisor support is one of the most critical factors influencing training transfer. In organisational contexts, supervisor support plays a pivotal role in fostering an environment where employees feel encouraged and empowered to apply their learning (A. N. Lee & Nie, 2014; A. N. Lee et al., 2020). For instance, supervisors can enhance employees' perception of training relevance and achievability by engaging in goal setting, providing performance feedback, and recognising efforts to implement training. Additionally, by

offering resources, meaningful feedback, learning-oriented goals, and demonstrating confidence in employees' abilities, supervisors strengthen employees' motivation to transfer training, which is essential for effective training transfer (Chiaburu & Marinova, 2005; Chiaburu et al., 2010; Grossman & Salas, 2011). This motivational boost underscores the importance of supervisory engagement in minimising barriers to transfer and maximising training outcomes (Burke & Hutchins, 2007).

Specifically, this study found that while perceived supervisor's training support had a positive and direct relationship with training transfer motivation, it also had indirect relationships with both training transfer and change readiness via training transfer motivation. Our findings therefore support the notion that training transfer motivation is a mediating variable and could serve as a connecting mechanism in the social support–training transfer link (Massenberg et al., 2015; Reinhold et al., 2018). This indicates that, in addition to external contextual support, enhancing employees' internal motivation is crucial for facilitating training transfer and promoting their willingness to adapt and engage in organisational change and innovations.

Additionally, the indirect relationship between perceived supervisor's training support and both training transfer and change readiness through training transfer motivation aligns with SCT (Bandura, 1986, 2001), which posits that motivation bridges environmental influences and behavioural outcomes. For instance, Massenberg et al. (2015) demonstrated that training transfer motivation serves as a key intermediary variable that translates supervisor support into improved training outcomes. Reinhold et al. (2018) also found that while social support from supervisors is critical, its effect on actual training transfer is predominantly realised through enhanced motivation among the employees. As such, employees who are motivated to apply training may be more likely to view workplace changes as opportunities for growth rather than disruptions (Cunningham et al., 2002). This connection is particularly relevant in dynamic organisational environments where the ability to adapt to change is increasingly vital for long-term success (Billett & Le, 2024; Ford et al., 2018).

Furthermore, the findings of this study also revealed that perceived supervisor's training support had a direct relationship with job satisfaction, highlighting that supervisor training support is a strong predictor of employees' job satisfaction. Concurrently, results also revealed an indirect relationship between perceived supervisor's training support and job satisfaction via training transfer motivation. This suggests that supervisors who actively collaborate with employees in setting training goals and providing feedback can enhance employees' positive perceptions of training engagement and training transfer, thereby improving professional competence and job satisfaction (Aiyoob et al., 2025; Cropanzano & Mitchell, 2005; C. H. Lee & Bruvold, 2003; Zumrah et al., 2013).

Implications and Recommendations

Generally, supervisors play a critical role in facilitating employee training and ensuring its successful transfer to workplace applications. To enhance their effectiveness in this role, organisations should prioritise equipping supervisors with the necessary skills and resources to guide training processes and foster training transfer within the workplace. Likewise, embedding supervisor's training support into performance evaluations can further incentivise their active engagement and reinforce accountability (Gegenfurtner et al., 2009; Kraiger & Ford, 2021).

To further strengthen supervisors' support for employee training and training transfer, the following recommendations are proposed:

- ***Pre-training Support*:** Supervisors could proactively engage employees in pre-training discussions to clarify objectives, emphasise the relevance of training, and connect it to employees' job roles and career aspirations. These discussions help to set clear expectations for skill application, fostering alignment between training programmes and workplace responsibilities (Bell et al., 2017). With the advancement of technologies, such as artificial intelligence and predictive analytics, supervisors could leverage these technologies to identify employees' training needs to provide more tailored training pathways to enhance employees' competence and growth

(Jarrahi et al., 2023). This personalised approach is likely to promote training motivation and training transfer, thereby encouraging employees to engage more effectively in workplace innovations and productivity.

- ***Post-training Support*:** Supervisors should implement structured post-training follow-ups that include feedback sessions, coaching, and access to essential resources (i.e., technology, time, and equipment) to effectively reinforce training transfer (Noe, 1986). It is important that supervisors proactively identify and address barriers to employees' skill application. Supervisors could also assign practical tasks or projects tailored to the training content to enable employees to immediately apply newly acquired skills in their job roles, thereby solidifying the transfer process (Kraiger & Ford, 2021). In addition, supervisors could encourage collaboration through team discussions, peer learning, and shared problem solving to foster a culture of collective growth. Essentially, creating a psychologically safe environment where employees feel encouraged to experiment, innovate, and view setbacks as opportunities for learning and development can further amplify the effectiveness of training and job fulfilment (Gegenfurtner et al., 2009).
- ***Providing Recognition and Rewards*:** Supervisors can enhance employees' motivation to apply training by offering recognition and rewards for their training transfer efforts. Formal recognition, performance appraisals, and tangible incentives serve to underscore the value of skill application, inspiring employees to embrace change and drive innovation (Bell et al., 2017). By aligning individual accomplishments with organisational goals, this approach not only reinforces the importance of training outcomes but also fosters a stronger sense of contribution and engagement among employees (Ng et al., 2024).
- ***Cultivating a Continuous Learning Culture*:** Supervisors should implement effective systems to monitor and reinforce the application of training, fostering a workplace culture that prioritises and rewards continuous learning. Recognising employees' efforts in training and acquisition of new skills highlights the importance of lifelong learning and encourages employees to pursue ongoing skill enhancement (Kraiger & Ford, 2021). Additionally, promoting collaboration through knowledge-sharing initiatives where employees exchange insights, best practices, and lessons learnt can facilitate collective growth, drive innovation, and strengthen a culture of continuous improvement. In Singapore's CET ecosystem, the National Centre of Excellence for Workplace Learning plays a key role in supporting organisations to embed workplace learning. Supervisors may benefit from partnering with the National Centre of Excellence for Workplace Learning to design and implement tailored workplace learning support solutions that promote a culture of continuous improvement and skills development (Ng et al., 2024).

Limitations and Suggestions for Future Research

This study has several limitations that warrant consideration. First, it relied on a small convenience sample of continuing education course attendees, which may limit the generalisability of the findings. Future research should aim to include larger samples and employ random or stratified sampling techniques to improve the robustness and applicability of results. Second, the study focused exclusively on perceived supervisor's training support, while other forms of workplace support, such as peer learning support, may also influence training transfer outcomes. Future research could explore the differential impacts of supervisor support and peer support on training transfer, and identifying which type of support serves as a stronger predictor. Third, this study was conducted within the Singapore context, where work and learning cultures may differ from other regions. Future research could conduct cross-cultural comparisons to investigate whether cultural variations affect training transfer outcomes, thereby enhancing the understanding of training transfer practices across diverse cultural settings.

Conclusion

This study underscores the essential role of supervisors in fostering employees' motivation for training and facilitating its transfer, leading to key outcomes such as effective training transfer, change readiness, and job satisfaction. It highlights the importance of equipping supervisors with the skills and resources needed to effectively support employees in their training and development journeys. The findings emphasise integrating supervisor support into workplace training policies as a strategic approach to leadership development and the promotion of a culture of lifelong learning. Such efforts not only improve employee performance and satisfaction but also enhance organisational resilience, enabling businesses to adapt to an evolving landscape and secure long-term success at both individual and organisational levels.

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Dr Ai Noi Lee is a Senior Lecturer at the National Institute of Education, Nanyang Technological University, Singapore. She teaches educational psychology and assessment-related courses to undergraduate and postgraduate students. She also has experience in designing and conducting continuing education and training courses for adult learners. Her research interest is in human development, and she is particularly keen in applying psychological theories and principles in understanding motivation and learning issues in the educational and work settings. She has published in peer-reviewed journals and scholarly books related to adult education, skills development, work motivation, employee empowerment, and leadership.

REFERENCES

Achoki, P. M. A. (2023). Upskilling and reskilling for a VUCA world: Organizational sense-response framework. *GiLE Journal of Skills Development*, *3*(2), 34–52. https://doi.org/10.52398/gjsd.2023.v3.i2.pp34-52

Aiyoob, T. B., Lee, A. N., & Nie, Y. (2025). Predictive relationships among teachers' perceived supervisor learning support, psychological needs satisfaction, use of technology and job satisfaction. *The Asia-Pacific Education Researcher*, *34*, 591–604. https://doi.org/10.1007/s40299-024-00880-z

Almannie, M. (2015). Barriers encountered in the transfer of educational training to workplace practice in Saudi Arabia. *Journal of Education and Training Studies*, *3*(5), 10–17. https://doi.org/10.11114/jets.v3i5.905

Andoh, R. P. K., Annan-Prah, E. C., Boampong, G. N., Jehu-Appiah, J., Korsah, A. M., & Owusu, E. A. (2024). Examination of the influence of transfer opportunity, assimilation of training content and motivation to transfer in the training transfer process. *European Journal of Training and Development*, *48*(3/4), 281–297. https://doi.org/10.1108/EJTD-09-2022-0100

Arifin, H. M. (2015). The influence of competence, motivation, and organisational culture to high school teacher job satisfaction and performance. *International Education Studies*, *8*(1), 38–45. https://doi.org/10.5539/ies.v8n1p38

Asim, A. I., Waqas, M., & Cheema, L. J. (2012). Mediating character of readiness to change between training and development and employees performance. *Oman Chapter of Arabian Journal of Business and Management Review*, *2*(1), 1–11. http://doi.org/10.12816/0002236

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *41*(1), 63–105. https://doi.org/10.1111/j.1744-6570.1988.tb00632.x

Baldwin, T. T., Ford, J. K., & Blume, B. D. (2009). Transfer of training 1988–2008: An updated review and agenda for future research. *International Review of Industrial and Organizational Psychology*, *24*, 41–70. https://doi.org/10.1002/9780470745267.ch2

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, *52*(1), 1–26. https://doi.org/10.1146/annurev.psych.52.1.1

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bell, B. S., Tannenbaum, S. I., Ford, J. K., Noe, R. A., & Kraiger, K. (2017). 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology*, *102*(3), 305–323. https://doi.org/10.1037/apl0000142

Billett, S., & Le, A. H. (2024). Developing adaptability for workplace performance and change. In A.N. Lee & Y. Nie (Eds.), *Future-oriented learning and skills development for employability: Insights from Singapore and some Asia-Pacific contexts* (pp. 199–214). Springer. https://doi.org/10.1007/978-981-97-8584-1_13

Blau, P. (1964). *Exchange and power in social life*. Wiley. https://doi.org/10.4324/9780203792643

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management*, *36*(4), 1065–1105. https://doi.org/10.1177/0149206309352880

Blume, B. D., Ford, J. K., Surface, E. A., & Olenick, J. (2019). A dynamic model of training transfer. *Human Resource Management Review*, *29*(2), 270–283. https://doi.org/10.1016/j.hrmr.2017.11.004

Bound, H., & Chen, Z. (2022). The dynamic landscape of adult education in Singapore. In Y.-J. Lee (Ed.), *Education in Singapore: People-making and nation-building* (Vol. 66, pp. 131–149). Springer. https://doi.org/10.1007/978-981-16-9982-5_8

Bound, H., & Lin, M. (2010). *Singapore Workforce Skills Qualification (WSQ), workplace learning and assessment (stage 1)*. Institute for Adult Learning. https://www.ial.edu.sg/getmedia/b9ff5ca8-1ce9-4975-af35-05b7932403fb/WSQ-Workplace-Learning-and-Assessment-Stage-I.pdf

Boxall, P., Huo, M. L., & Winterton, J. (2019). How do workers benefit from skill utilisation and how can these benefits be enhanced? *Journal of Industrial Relations*, *61*(5), 704–725. https://doi.org/10.1177/0022185618819169

Brayfield, A. H., & Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, *35*(5), 307–311. https://doi.org/10.1037/h0055617

Burke, L. A., & Baldwin, T. T. (1999). Workforce training transfer: A study of the effect of relapse prevention training and transfer climate. *Human Resource Management*, *38*, 227–241. https://doi.org/10.1002/(SICI)1099-050X(199923)38:3<227::AID-HRM5>3.0.CO;2-M

Burke, L. A., & Hutchins, H. M. (2007). Training transfer: An integrative literature review. *Human Resource Development Review*, *6*(3), 263–296. https://doi.org/10.1177/1534484307303035

Caesens, G., & Stinglhamber, F. (2014). The relationship between perceived organizational support and work engagement: The role of self-efficacy and its outcomes. *European Review of Applied Psychology*, *64*(5), 259–267. https://doi.org/10.1016/j.erap.2014.08.002

Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*(2), 245–276. https://doi.org/10.1207/s15327906mbr0102_10

Chia, Y., & Sheng, Y. Z. (2022). From lifelong learning to lifelong employability: How SkillsFuture has re-conceptualised higher education for the future of work. In B. Ng (Ed.), *Higher education and job employability* (Vol. 10, pp. 179–194). Springer, Cham. https://doi.org/10.1007/978-3-031-05716-8_9

Chiaburu, D. S., & Marinova, S. V. (2005). What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports. *International Journal of Training and Development*, *9*(2), 110–123. https://doi.org/10.1111/j.1468-2419.2005.00225.x

Chiaburu, D. S., Van Dam, K., & Hutchins, H. M. (2010). Social support in the workplace and training transfer: A longitudinal analysis. *International Journal of Selection and Assessment*, *18*(2), 187–200. https://doi.org/10.1111/j.1468-2389.2010.00500.x

Choiriyah, S., & Riyanto, S. (2021). Effect of training and competence on job satisfaction and its impact on employee commitment (case study at BPJS Ketenagakerjaan). *International Journal of Innovative Science and Research Technology*, *6*(6), 1021–1030. https://ijisrt.com/effect-of-training-and-competence-on-job-satisfaction-and-its-impact-on-employee-commitment-case-study-at-bpjs-ketenagakerjaan

Chung, S., Zhan, Y., Noe, R. A., & Jiang, K. (2022). Is it time to update and expand training motivation theory? A meta-analytic review of training motivation research in the 21st century. *Journal of Applied Psychology*, *107*(7), 1150–1179. https://doi.org/10.1037/apl0000901

Comrey, A. L. (1988). Factor-analytic methods of scale development in personality and clinical psychology. *Journal of Consulting and Clinical Psychology*, *56*(5), 754–761. https://doi.org/10.1037/0022-006X.56.5.754

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*(6), 874–900. https://doi.org/10.1177/0149206305279602

Cunningham, C. E., Woodward, C. A., Shannon, H. S., MacIntosh, J., Lendrum, B., Rosenbloom, D., & Brown, J. (2002). Readiness for organizational change: A longitudinal study of workplace, psychological and behavioural correlates. *Journal of Occupational and Organizational Psychology*, *75*(4), 377–392. https://doi.org/10.1348/096317902321119637

D'Annunzio-Green, N., & Barron, P. (2019). Learning whilst working: Perceptions on barriers and enablers to transfer of learning amongst part-time students on a professional MSc programme. *Education + Training*, *61*(2), 187–200. https://doi.org/10.1108/ET-04-2018-0098

Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. (2023). *Future of jobs report 2023*. World Economic Forum. https://www.weforum.org/publications/the-future-of-jobs-report-2023/

Floyd, F. J., & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, *7*(3), 286–299. https://doi.org/10.1037/1040-3590.7.3.286

Ford, J. K., Baldwin, T. T., & Prasad, J. (2018). Transfer of training: The known and the unknown. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*(1), 201–225. https://doi.org/10.1146/annurev-orgpsych-032117-104443

Fung, M. (2020). Developing a robust system for upskilling and reskilling the workforce: Lessons from the SkillsFuture movement in Singapore. In B. Panth & R. Maclean (Eds.), *Anticipating and preparing for emerging skills and jobs: Key issues, concerns, and prospects* (Vol. 55, pp. 321–327). Springer. https://doi.org/10.1007/978-981-15-7018-6_39

Gegenfurtner, A., Festner, D., Gallenberger, W., Lehtinen, E., & Gruber, H. (2009). Predicting autonomous and controlled motivation to transfer training. *International Journal of Training and Development*, *13*(2), 124–138. https://doi.org/10.1111/j.1468-2419.2009.00322.x

Gog, S. J., Tan, E., & Tan, K. (2024). Future-skilling the workforce: SkillsFuture movement in Singapore. In U.-D. Ehlers & L. Eigbrecht (Eds.), *Creating the university of the future: A global view on future skills and future higher education* (pp. 515–528). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-42948-5_26

Goulart, V. G., Liboni, L. B., & Cezarino, L. O. (2022). Balancing skills in the digital transformation era: The future of jobs and the role of higher education. *Industry and Higher Education*, *36*(2), 118–127. https://doi.org/10.1177/09504222211029796

Govaerts, N., & Dochy, F. (2014). Disentangling the role of the supervisor in transfer of training. *Educational Research Review*, *12*, 77–93. https://doi.org/10.1016/j.edurev.2014.05.002

Grossman, R., & Salas, E. (2011). The transfer of training: What really matters. *International Journal of Training and Development*, *15*(2), 103–120. https://doi.org/10.1111/j.1468-2419.2011.00373.x

Guan, X., & Frenkel, S. (2019). How perceptions of training impact employee performance: Evidence from two Chinese manufacturing firms. *Personnel Review*, *48*(1), 163–183. https://doi.org/10.1108/PR-05-2017-0141

Hair, J. F., Jr., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006*). Multivariate data analysis* (6th ed.). Prentice Hall.

Hamid, S. (2019). The strategic position of human resource management for creating sustainable competitive advantage in the VUCA world. *Journal of Human Resources Management and Labor Studies*, *7*(2), 1–4. https://doi.org/10.15640/jhrmls.v7n2a1

Hariadi, A. R., & Muafi, M. (2022). The effect of transformational leadership on employee performance mediated by readiness to change & work motivation: A survey of PT. Karsa Utama Lestari employees. *International Journal of Research in Business and Social Science*, *11*(6), 252–263. https://doi.org/10.20525/ijrbs.v11i6.1945

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Holton, E. F., III., Bates, R. A., & Ruona, W. E. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly*, *11*(4), 333–360. https://doi.org/10.1002/1532-1096(200024)11:4<333::AID-HRDQ2>3.0.CO;2-P

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hughes, A. M., Zajac, S., Woods, A. L., & Salas, E. (2020). The role of work environment in training sustainment: A meta-analysis. *Human Factors*, *62*(1), 166–183. https://doi.org/10.1177/0018720819845988

Iqbal, K., & Dastgeer, G. (2017). Impact of self-efficacy and retention on transfer of training: The mediating role of motivation to transfer. *Journal of Management Development*, *36*(10), 1270–1282. https://doi.org/10.1108/JMD-06-2015-0087

Jarrahi, M. H., Kenyon, S., Brown, A., Donahue, C., & Wicher, C. (2023). Artificial intelligence: A strategy to harness its power through organizational learning. *Journal of Business Strategy*, *44*(3), 126–135. https://doi.org/10.1108/JBS-11-2021-0182

Junça Silva, A., & Pinto, D. (2024). Training under an extreme context: The role of organizational support and adaptability on the motivation transfer and performance after training. *Personnel Review*, *53*(3), 743–770. https://doi.org/10.1108/PR-09-2022-0629

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, *20*(1), 141–151. https://doi.org/10.1177/001316446002000116

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). Guilford Press. https://psycnet.apa.org/record/2005-03476-000

Kraiger, K., & Ford, J. K. (2021). The science of workplace instruction: Learning and development applied to work. *Annual Review of Organizational Psychology and Organizational Behavior*, *8*(1), 45–72. https://doi.org/10.1146/annurev-orgpsych-012420-060109

Lee, C. H., & Bruvold, N. T. (2003). Creating value for employees: Investment in employee development. *The International Journal of Human Resource Management*, *14*(6), 981–1000. https://doi.org/10.1080/0958519032000106173

Lee, A. N., Cai, V., Nie, Y., Ong, L., Phua, C. T., Mohd, A., Tan, A., & Yang, S. (2024). Perceived workplace learning support and its relationship with motivation to transfer training, training transfer and readiness to change: Evidence from a sample of Singapore working adults. In A.N. Lee & Y. Nie (Eds.), *Future-oriented learning and skills development for employability: Insights from Singapore and some Asia-Pacific contexts* (pp. 265–282). Springer. https://doi.org/10.1007/978-981-97-8584-1_17

Lee, A. N., & Nie, Y. (2014). Understanding teacher empowerment: Teachers' perceptions of principal's and immediate supervisor's empowering behaviours, psychological

empowerment and work-related outcomes. *Teaching and Teacher Education*, *41*, 67–79. https://doi.org/10.1016/j.tate.2014.03.006

Lee, A. N., & Nie, Y. (Eds.). (2024). *Future-oriented learning and skills development for employability: Insights from Singapore and some Asia-Pacific contexts*. Springer. https://doi.org/10.1007/978-981-97-8584-1

Lee, A. N., Nie, Y., & Bai, B. (2020). Perceived principal's learning support and its relationships with psychological needs satisfaction, organisational commitment and change-oriented work behaviour: A Self-Determination Theory's perspective. *Teaching and Teacher Education*, *93*, Article 103076. https://doi.org/10.1016/j.tate.2020.103076

Lim, Z. Y., Yap, J. H., Lai, J. W., Mokhtar, I. A., Yeo, D. J., & Cheong, K. H. (2024). Advancing lifelong learning in the digital age: A narrative review of Singapore's SkillsFuture programme. *Social Sciences*, *13*(2), Article 73. https://doi.org/10.3390/socsci13020073

Loh, C., & Yeo, W. S. (2024). Forward Singapore: Strengthening SkillsFuture. *Singapore Labour Journal*, *3*(1), 114–122. https://doi.org/10.1142/S2811031524000081

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, *58*(1), 593–614. https://doi.org/10.1146/annurev.psych.58.110405.085542

Maggi-da-Silva, P. T., Bido, D. D. S., & Reatto, D. (2022). The effects of job autonomy, learning culture, and organizational cynicism on learning transfer in MBA. *Revista Brasileira de Gestão de Negócios*, *24*(2), 230–246. https://doi.org/10.7819/rbgn.v24i2.4166

Mansour, A., Rowlands, H., Al-Gasawneh, J. A., Nusairat, N. M., Al-Qudah, S., Shrouf, H., & Akhorshaideh, A. H. (2022). Perceived benefits of training, individual readiness for change, and affective organizational commitment among employees of national Jordanian banks. *Cogent Business & Management*, *9*(1), Article 1966866. https://doi.org/10.1080/23311975.2021.1966866

Massenberg, A. C., Spurk, D., & Kauffeld, S. (2015). Social support at the workplace, motivation to transfer and training transfer: A multilevel indirect effects model. *International Journal of Training and Development*, *19*(3), 161–178. https://doi.org/10.1111/ijtd.12054

Matthysen, M., & Harris, C. (2018). The relationship between readiness to change and work engagement: A case study in an accounting firm undergoing change. *SA Journal of Human Resource Management*, *16*(1), 1–11. https://doi.org/10.4102/sajhrm.v16i0.855

Merdiaty, N., Rimbun, L. R., Wijaya, P. A. D., & Shintiarafy, V. A. (2022). Link readiness for change to work performance through mindfulness among health care employees in Indonesia. *International Journal of Research in Business and Social Science*, *11*(4), 149–158. https://doi.org/10.20525/ijrbs.v11i4.1812

Muduli, A., & Raval, D. (2018). Examining the role of work context, transfer design and transfer motivation on training transfer: Perspective from an Indian insurance industry. *European Journal of Training and Development*, *42*(3/4), 266–282. https://doi.org/10.1108/EJTD-09-2017-0078

Na-Nan, K., & Sanamthong, E. (2020). Self-efficacy and employee job performance: Mediating effects of perceived workplace support, motivation to transfer and transfer of training. *International Journal of Quality & Reliability Management*, *37*(1), 1–17. https://doi.org/10.1108/IJQRM-01-2019-0013

Naz, S., & Sharma, H. (2017). Job satisfaction among different working organizations: A literature review. *Research Journal of Social Science and Management*, *7*(6), 29–37. http://www.theinternationaljournal.org/ojs/index.php?journal=tij&op=download&page=article&path%5B%5D=6247&path%5B%5D=pdf

Ng, B., Mohd, A., Lee, M., & Cai, V. (2024). Supporting employee learning: Lessons from workplace learning organisations in Singapore. In A.N. Lee & Y. Nie (Eds.), *Future-oriented learning and skills development for employability: Insights from Singapore and*

some Asia-Pacific contexts (pp. 283–295). Springer. https://doi.org/10.1007/978-981-97-8584-1_18

Noar, S. M. (2003). The role of structural equation modeling in scale development. *Structural Equation Modeling: A Multidisciplinary Journal*, *10*(4), 622–647. https://doi.org/10.1207/S15328007SEM1004_8

Noe, R. A. (1986). Trainees' attributes and attitudes: Neglected influences on training effectiveness. *The Academy of Management Review*, *11*(4), 736–749. https://doi.org/10.2307/258393

Pangaribuan, C., Wijaya, F., Djamil, A., Hidayat, D., & Putra, O. (2020). An analysis on the importance of motivation to transfer learning in VUCA environments. *Management Science Letters*, *10*(2), 271–278. http://doi.org/10.5267/j.msl.2019.9.005

Reinhold, S., Gegenfurtner, A., & Lewalter, D. (2018). Social support and motivation to transfer as predictors of training transfer: Testing full and partial mediation using meta-analytic structural equation modelling. *International Journal of Training and Development*, *22*(1), 1–14. https://doi.org/10.1111/ijtd.12115

Saks, A. M., & Burke, L. A. (2012). An investigation into the relationship between training evaluation and the transfer of training. *International Journal of Training and Development*, *16*(2), 118–127. https://doi.org/10.1111/j.1468-2419.2011.00397.x

Salamon, J., Blume, B. D., Orosz, G., & Nagy, T. (2021). The interplay between the level of voluntary participation and supervisor support on trainee motivation and transfer. *Human Resource Development Quarterly*, *32*(4), 459–481. https://doi.org/10.1002/hrdq.21428

Santos, A., & Stuart, M. (2003). Employee perceptions and their influence on training effectiveness. *Human Resource Management Journal*, *13*(1), 27–45. https://doi.org/10.1111/j.1748-8583.2003.tb00082.x

Schlegel, D., & Kraus, P. (2023). Skills and competencies for digital transformation: A critical analysis in the context of robotic process automation. *International Journal of Organizational Analysis*, *31*(3), 804–822. https://doi.org/10.1108/IJOA-04-2021-2707

Schoemaker, P. J., Heaton, S., & Teece, D. (2018). Innovation, dynamic capabilities, and leadership. *California Management Review*, *61*(1), 15–42. https://doi.org/10.1177/0008125618790246

Seiberling, C., & Kauffeld, S. (2017). Volition to transfer: Mastering obstacles in training transfer. *Personnel Review*, *46*(4), 809–823. https://doi.org/10.1108/PR-08-2015-0202

Settoon, R. P., Bennett, N., & Liden, R. C. (1996). Social exchange in organizations: Perceived organizational support, leader–member exchange, and employee reciprocity. *Journal of Applied Psychology*, *81*(3), 219–227. https://doi.org/10.1037/0021-9010.81.3.219

Shen, J., & Tang, C. (2018). How does training improve customer service quality? The roles of transfer of training and job satisfaction. *European Management Journal*, *36*(6), 708–716. https://doi.org/10.1016/j.emj.2018.02.002

Steele-Johnson, D., Narayan, A., Delgado, K. M., & Cole, P. (2010). Pretraining influences and readiness to change dimensions: A focus on static versus dynamic issues. *The Journal of Applied Behavioral Science*, *46*(2), 245–274. https://doi.org/10.1177/0021886310365058

Stoffers, J., & Mordant-Dols, A. (2015). Transformational leadership and professionals' willingness to change: A multiple case study in project management organisations. *Human Resource Management Research*, *5*(2), 40–46.

Sung, J. (2011, February). *The Singapore Continuing Education and Training (CET) system*. Labour Market Research, Skills Development Scotland.

Tan, C. (2017). Lifelong learning through the SkillsFuture movement in Singapore: Challenges and prospects. *International Journal of Lifelong Education*, *36*(3), 278–291. https://doi.org/10.1080/02601370.2016.1241833

Teo, T. (2010). The development, validation, and analysis of measurement invariance of the technology acceptance measure for preservice teachers (TAMPST). *Educational and Psychological Measurement*, *70*(6), 990–1006. https://doi.org/10.1177/0013164410378087

Thakur, R. R., & Srivastava, S. (2018). From resistance to readiness: The role of mediating variables. *Journal of Organizational Change Management*, *31*(1), 230–247. https://doi.org/10.1108/JOCM-06-2017-0237

Vakola, M. (2014). What's in there for me? Individual readiness to change and the perceived impact of organizational change. *Leadership & Organization Development Journal*, *35*(3), 195–209. https://doi.org/10.1108/LODJ-05-2012-0064

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, *34*(6), 806–838. https://doi.org/10.1177/0011000006288127

Zumrah, A. R., Boyle, S., & Fein, E. C. (2013). The consequences of transfer of training for service quality and job satisfaction: An empirical study in the Malaysian public sector. *International Journal of Training and Development*, *17*(4), 279–294. https://doi.org/10.1111/ijtd.12017

Appendix A

The EFA and CFA Factor Loadings of the Main Variables of Study (*N* = 297)

Variables	EFA	CFA
Perceived Supervisor's Training Support		
My supervisor makes sure I get the training I need to remain effective on my job.	0.91	.85
My supervisor coaches and guides me effectively in transferring what I learnt in my training to my job.	0.90	.89
My supervisor provides appropriate resources and opportunities to enable me to apply what I have learnt from the training.	0.89	.90
My supervisor helps me in setting performance goals based on this training.	0.88	.86
When I attend training course/activities, my supervisor helps to ease the pressures of work when I am away.	0.83	.75
My supervisor and I regularly discuss my training needs and developmental plans to help me meet those needs.	0.81	.81
Training Transfer Motivation		
I am determined to use the knowledge and skills covered in this course in my job whenever I have the possibility to do so.	0.95	.84
I am committed to apply what I have learnt to my job.	0.90	.93
Although it may be difficult to immediately implement all my knowledge and skills covered in this course in my job, I will try my best to do so.	0.90	.76
I am motivated to apply the knowledge and skills covered in this course in my job.	0.79	.87
I will discuss with my coworkers ways to develop what I have learnt in this course.	0.63	.66
Training Transfer		
How frequently have you used the knowledge and skills covered in this course in your job?	0.92	.94
To what extent are you required to use the knowledge and skills covered in this course in your job?	0.92	.85
How frequently do you look for opportunities to use the knowledge and skills covered in this course in your job?	0.83	.71
To what extent are you able to apply the knowledge and skills covered in this course to your job if you are told to do so?	0.75	.75
Change Readiness		
I am willing to take responsibility for making the change in my work.	0.88	.88
I am willing to find ways to make necessary changes to my work.	0.88	.77
I am willing to take part in the change process in my organisation.	0.87	.89
I am willing to do things in a new or creative way in the work I do.	0.86	.79

Job Satisfaction		
Most days I feel a sense of accomplishment from working.	0.93	.92
Most days, I am enthusiastic about my job.	0.92	.91
I find real enjoyment in my job.	0.90	.88
I like my job better than the average worker does.	0.90	.85
I feel fairly well satisfied with my job.	0.88	.83

Note. Only EFA and CFA factor loadings greater than 0.40 are presented. In EFA, the factors were rotated obliquely (Promax rotation). The CFA factor loadings presented are standardised regression coefficients.

Appendix B

Final Items of the Main Variables Used in the Study

Perceived Supervisor's Training Support

1. My supervisor makes sure I get the training I need to remain effective on my job.
2. My supervisor coaches and guides me effectively in transferring what I learnt in my training to my job.
3. My supervisor provides appropriate resources and opportunities to enable me to apply what I have learnt from the training.
4. My supervisor helps me in setting performance goals based on this training.
5. When I attend training course/activities, my supervisor helps to ease the pressures of work when I am away.
6. My supervisor and I regularly discuss my training needs and developmental plans to help me meet those needs.

Training Transfer Motivation

1. I am determined to use the knowledge and skills covered in this course in my job whenever I have the possibility to do so.
2. I am committed to apply what I have learnt to my job.
3. Although it may be difficult to immediately implement all my knowledge and skills covered in this course in my job, I will try my best to do so.
4. I am motivated to apply the knowledge and skills covered in this course in my job.
5. I will discuss with my coworkers ways to develop what I have learnt in this course.

Training Transfer

1. How frequently have you used the knowledge and skills covered in this course in your job?
2. To what extent are you required to use the knowledge and skills covered in this course in your job?
3. How frequently do you look for opportunities to use the knowledge and skills covered in this course in your job?
4. To what extent are you able to apply the knowledge and skills covered in this course to your job if you are told to do so?

Change Readiness

1. I am willing to take responsibility for making the change in my work.
2. I am willing to find ways to make necessary changes to my work.
3. I am willing to take part in the change process in my organisation.
4. I am willing to do things in a new or creative way in the work I do.

Job Satisfaction

1. Most days I feel a sense of accomplishment from working.
2. Most days, I am enthusiastic about my job.
3. I find real enjoyment in my job.
4. I like my job better than the average worker does.
5. I feel fairly well satisfied with my job.

BRIEF REPORTS

Young Pathways: Youths Embrace Portfolio Careers and Diversified Income Streams

King Wang Poon and Isabel Lam

Abstract

In a traditional work model, employees sign contracts with companies and work for them full time, and some even end up working in the same job for decades. However, in recent times, we have observed the adoption of alternative work models where workers work for themselves as independent contractors or freelancers, performing a variety of work for different organisations or taking up project-based work with other organisations in addition to their full-time employment or study. This paper explores this phenomenon, with a focus on youths in Singapore through findings from literature and two studies conducted by the National Trades Union Congress in partnership with the Lee Kuan Yew Centre for Innovative Cities in the Singapore University of Technology and Design, which in total engaged approximately 11,000 individuals across surveys, focus group discussions, and dialogue sessions. The findings of the studies present the reasons and motivations behind the adoption of such work practices. The paper also discusses the effects of this phenomenon, particularly on workers, employers, and the nation.

Introduction

Work arrangements globally, including in Singapore, are undergoing significant changes, with nontraditional and flexible work models like gig roles, remote jobs, and freelance work becoming increasingly common. This is partly because the COVID-19 pandemic accelerated trends towards remote work and economic shifts—especially in industries like technology—have led an increasing proportion of employers to favour shorter contracts and project-based hiring over traditional roles (Boucher et al., 2020; Bracy & Dark, 2023; Tan, 2023; Zalizan, 2022). Culturally, workers' needs and career motivations have become more multifaceted, with a growing desire for autonomy, well-being, and personal development (Spreitzer & Porath, 2012). Movements like FIRE (i.e. Financial Independence, Retire Early) and "lying flat" are displays of some of these shifting mindsets focused on well-being over career advancement (Ford, 2024). Notably, these phenomena are more common among young workers.

The digital age has made diverse earning options available, from content creation to freelance gigs through social media and gig work platforms, reshaping youth's perceptions about profitable and sustainable careers. Many youths have chosen these flexible options over traditional career paths to prioritise work-life balance and personal fulfilment (Ford, 2024). Nevertheless, many may also perform gig work to cope with economic burdens and social obligations.

The term "work portfolio" was popularised by Charles Handy. He posited that it described how different bits of work in our life might fit together to form a balanced whole (Handy, 1989). Later on, the concept of a boundaryless career emerged, challenging traditional ideas of careers. This concept purported that careers may transcend single organisations, industries, or roles (Arthur & Rousseau, 1996). More recently, "portfolio work" has entered common usage and is understood as "[working] for several different companies or organisations at the same time" (Cambridge University Press, n.d.-b). However, these existing definitions and concepts do not fully capture the observed practice of portfolio work. Chiefly, the varied ways individuals engage in multiple work arrangements can be further distinguished as (a) integrated portfolio work, where multiple roles align with a cohesive career path, and (b) nonintegrated portfolio work, where roles are primarily transactional and taken up for short-term financial gain rather than career development per se. Additionally, concurrency is not essential; varied roles performed over time also constitute a portfolio career.

The practice of gig work "on the side" has generally been referred to as side hustles. A side hustle is "work or jobs that [one] gets paid for doing in addition to doing [their] main job" (Cambridge University Press, n.d.-a). In this context, a main job refers to employment that involves a contract of service, where the individual is an employee, either in a full-time or part-time capacity. For students, their primary job is considered to be their education.

This paper examines the key motivators behind the emerging practices of side hustles and portfolio work as well as the benefits and consequences on individuals, employers, and the workforce. The paper draws from two recent studies on the phenomenon as well as traditional and grey literature. It demonstrates that these practices are just as much driven by external factors (e.g. digitalisation, economic instability) as they are by internal factors (e.g. desire for work-life balance, financial independence). It also finds that, although opinions on these practices remain divisive among employers and may carry risks for workers, it undoubtedly benefits the development of a skills-based workforce and individual career growth. A global shift towards a skills-first workforce aligns with the rise of portfolio work and side hustles, which provide opportunities for workers to develop diverse and in-demand skills. By facilitating continuous skills acquisition, these work arrangements not only enhance individual career growth but may also contribute to Singapore's workforce competitiveness in a rapidly evolving economy. Thus, this paper posits that this phenomenon is likely to extend well into the future, influencing and modifying work and employment structures, making it crucial for the Labour Movement to consider how it may support workers, particularly youth, in their pursuit of such alternative career trajectories by safeguarding their rights and opportunities.

Research Methodology

Survey and Focus Group Discussions Designs and Respondents

This paper presents two studies which provide both quantitative and qualitative insights into the factors driving youths towards portfolio work and side hustles, conducted between 2022 and 2024—during the COVID-19 pandemic and the immediate period after.

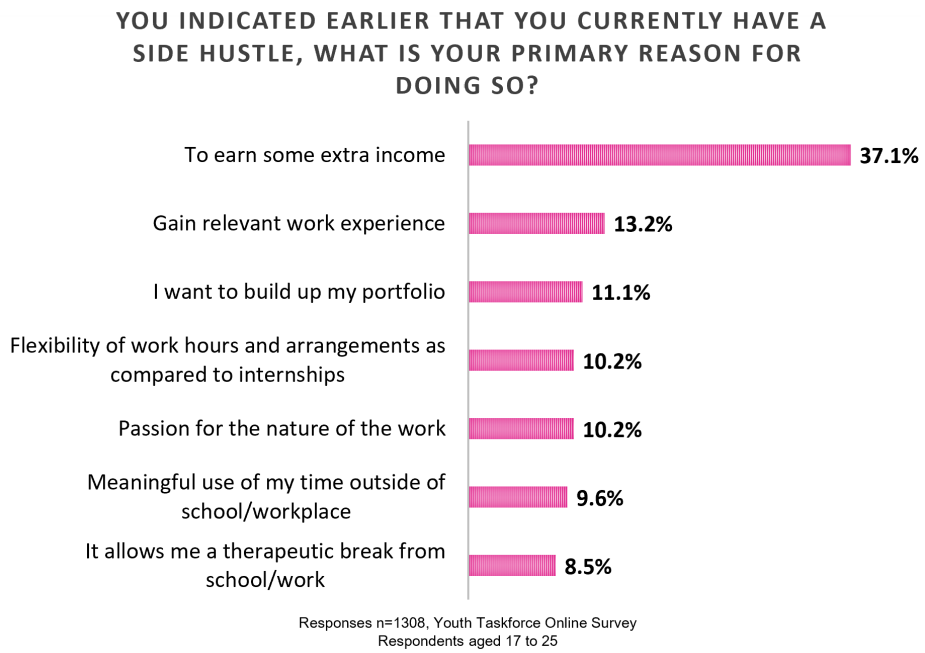
The first study, "NTUC Youth Taskforce," launched in July 2022 initiated by Young NTUC, engaged a total of 10,568 youths aged 17–25 years through surveys, focus group discussions (FGDs), and dialogues. These questionnaires and discussions were conducted at separate times on unique samples. This study uncovered how young Singaporeans perceive their careers, financial goals, and mental well-being, offering a glimpse into the expectations and aspirations of the next generation of workers. The second study, "Youth Interests Study," conducted by NTUC U Innovation Lab in partnership with the Lee Kuan Yew Centre for Innovative Cities in the Singapore University of Technology and Design between 2023 and 2024, comprised a series of FGDs engaging a total of 25 individuals between 20 and 50 years old and a survey focusing on side hustles, which surveyed 1,000 youths aged 18–35 years. The studies examined the incidence of side hustles—particularly among youths, such as interest areas, time dedicated, and underlying motivations, providing a deeper understanding of both side hustles and portfolio work preferences among youths in Singapore.

Results

In a survey conducted for the NTUC Youth Taskforce study, 2,294 respondents were asked if they currently had a side hustle and 57% of respondents answered "Yes." Also, 71% of the respondents indicated "Yes" to the question "Do you think it is necessary to have a side hustle in order to live your desired lifestyle in Singapore?"

Figure 1

Youth Taskforce Online Survey Results—Side Hustle Motivations

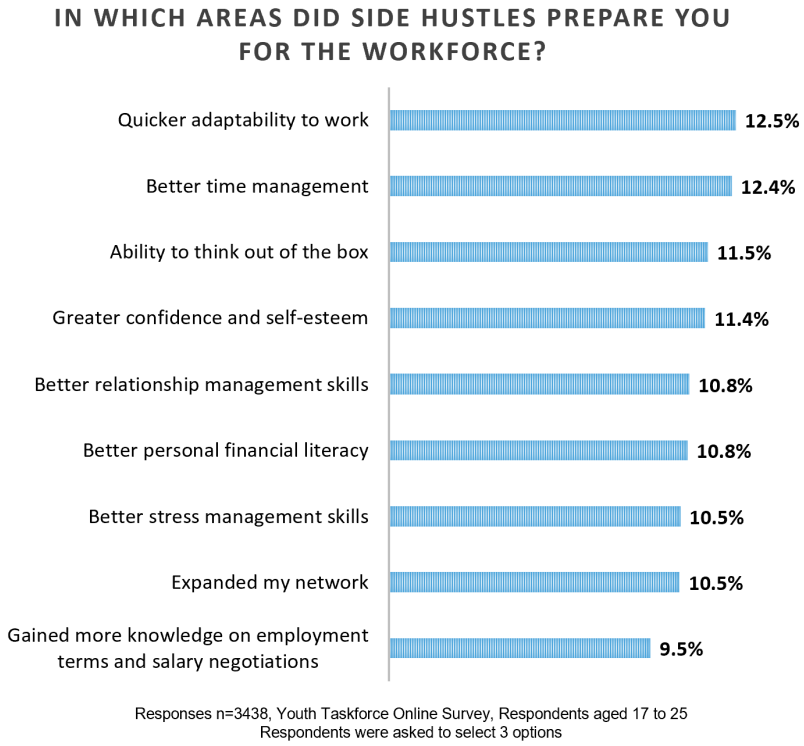


In the same survey, respondents who indicated they had a side hustle cited their top reason for doing so was to earn some extra income (see Figure 1). Using side hustles to gain relevant

work experience and to build up their own portfolio were also important reasons for the respondents.

Figure 2

Youth Taskforce Online Survey Results—Areas Side Hustles Help Prepare Youths for the Workforce

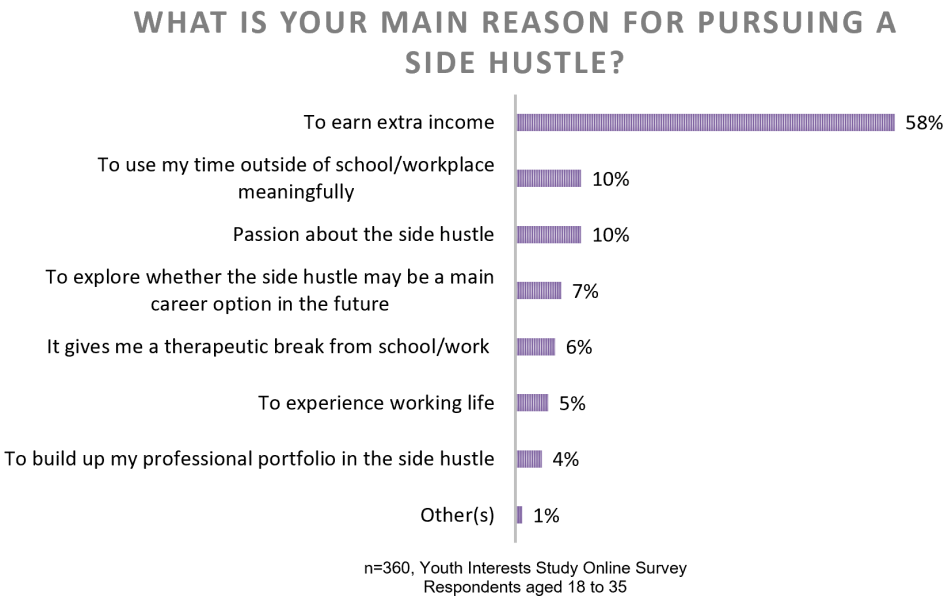


Respondents also indicated that side hustles helped to prepare them for the workforce, in the areas of (a) quicker adaptability to work, (b) better time management, and (c) the ability to think out of the box (see Figure 2).

Additionally, though 71% of youth believed side hustles were necessary for their desired lifestyle, their top workforce concerns were nonfinancial. A separate Youth Taskforce survey showed that the top three concerns respondents aged 17–25 years faced about entering the workforce were about their abilities to achieve work-life balance (23%), adapt to work (18%), and exercise autonomy in their career decisions (12%). In comparison, worries about finding remuneration that met expectations only recorded 5%.

Figure 3

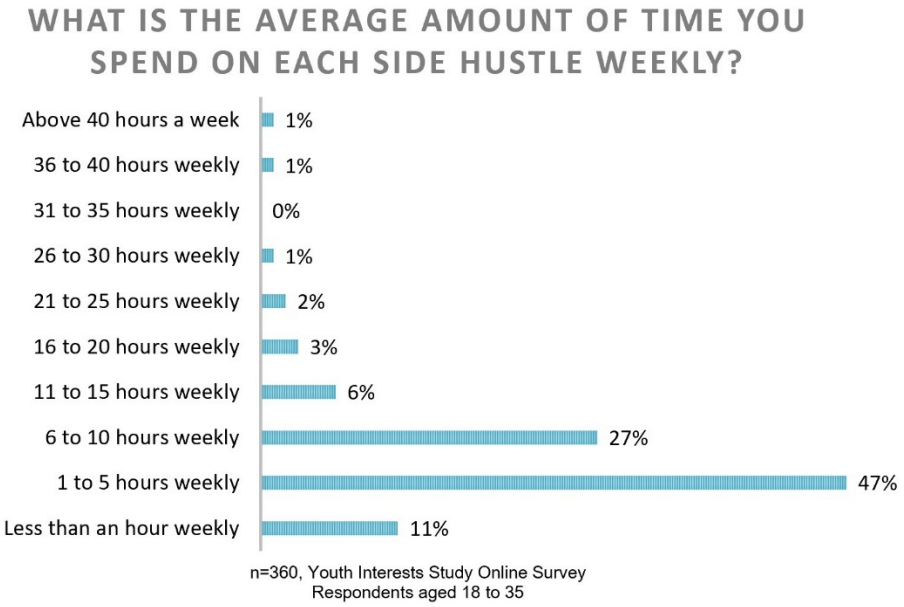
Youth Interests Study Online Survey Results—Side Hustle Motivations



In the Youth Interests Study online survey of 1,000 youths aged 18–35 years, 36% of the respondents indicated that they had a side hustle, while the incidence of side hustles was 40% among the 18–24-year-olds. The top reason for pursuing a side hustle among these respondents was to earn extra income, with "to use my time outside of school/workplace meaningfully" and "passion about the side hustle" tied for the second-most popular reason (see Figure 3).

Figure 4

Youth Interests Study Online Survey Results—Average Time Spent on Side Hustles



From the same survey, most respondents (85%) spent less than 10 hours a week on their side hustles, with many spending less than 5 hours.

Discussion

This section examines the findings of the two studies and literature on the phenomenon of side hustles, focusing on the key motivators and broader implications for the economy, employers, and individuals.

Overall, the findings show that the phenomenon of side hustles is more prevalent among those aged 25 years and below. This is demonstrated in the Youth Taskforce survey, where 57% of respondents aged 17–25 years reported having a side hustle. Interestingly, the Youth Interests survey also recorded 40% of respondents aged 18–24 years having a side hustle;[1] though not as high as the former survey, it still indicates a significant incidence of side hustles. These findings highlight how younger workers are driving new labour trends, prioritising flexibility and diversified income over traditional single-employer models.

Motivations Behind Side Hustles

The survey findings of both studies reveal that there is a considerable incidence of side hustles among youths, with financial needs being a major reason. For many, these extra income streams provide a way to navigate today's economic uncertainties whether by raising their earnings or simply diversifying their risks, reducing the impact of losing a job.

The *TODAY* Youth Survey 2023 found 74% of youths agree that it was possible they could face retrenchment at least once in their lifetime, indicating economic and career insecurity were not just major concerns, but in fact a strong belief of reality among youths (Goh & Yeo, 2023).

While previous generations often worked within a single role, today's youths prioritise developing transferable skillsets to navigate and insure themselves in a rapidly evolving job market. This shift underscores the complementary relationship between upskilling and job security, where continuous skills development supports career progression, whether within their current roles or in new opportunities. One of the ways in which these skillsets are being developed is by having varied work experiences, sometimes through working many different (small) jobs at the same time.

Nonfinancial factors may also be equally influential. Side hustles may serve a secondary purpose beyond earnings, addressing nonfinancial anxieties. In the Youth Taskforce study, in one survey, only 5% explicitly cited remuneration as a top-three workforce concern. Yet, 57% indicated in a separate survey that they had side hustles (and 71% believed them necessary). This disparity may be due to financial stress being so ingrained and immutable that youths are instead focusing on secondary concerns like balance and autonomy, which they perceive they may have more influence over. Additionally, while earnings may have been the top reason for youths who have side hustles, the results for nonfinancial motivations were still noteworthy, all recording above 5% (see Figure 1).

The flexibility that comes with side hustles allows individuals to pursue personal interests and use their time in more meaningful ways, beyond the confines of school or full-time work, evidenced by the findings of the two studies (see Figures 1 and 3). Thus, it is evident that youths are motivated by more than just financial desires; side hustles offer paths for personal growth, flexibility, and resilience, aligning well with youths' evolving priorities.

Opportunities and Challenges of Pursuing Side Hustles

The Youth Taskforce study findings present how side hustles equip young individuals with valuable skills for the workforce, particularly in the areas of adaptability, time management, and creative thinking (see Figure 2). Side hustles offer practical experience in managing multiple responsibilities, helping individuals quickly adjust to various work environments.

For workers, practising side hustles benefits them as it diversifies the risks of job insecurity and in some cases, maximises their earnings through multiple income streams, giving them a

[1] Age options in the Youth Interests survey were "18–24" years and "25–35" years.

greater sense of autonomy and control over their work life and finances. James Hudson, writing for *Forbes*, suggested that: "With more and more workers creating personal financial security through the creator and gig economies, it's easy to see a future where the most agile workers have the ability to pick and choose engagements as they see fit" (Hudson, 2024).

The accessibility and low barriers to entry of side hustles allow youth to experience work life and attain new skills and experiences without heavy commitments or expectations. In a way, they can "trial" different types of work across sectors before choosing to commit to a particular path. Importantly, the Youth Taskforce engagements revealed that youths feel unsure about their aspirations—which may be assuaged by a model of trialling, like engaging in side hustles and internships. The Career Starter Lab initiative jointly developed by NTUC and the Singapore National Employers Federation aims to provide that. This enhanced career trial model is intended to improve upon traditional internship models to provide youths with workplace mentorship and structured training.

The shift of emphasis from qualifications to skills also allows workers to shine in their strengths and companies to recruit good contributors. Gigs are a practical demonstration and validation that one's skills are in demand and/or adequate to receive remuneration, and provide a pathway to hone skills and gain work experience. In fact, a Youth Interests Study FGD participant secured a job immediately after completing his GCE "A" levels—his success in his side hustle proved he could perform the job without the typically required higher qualifications like a diploma or degree. This may pave the way for individuals who are exceptionally competent in certain skills and tasks but may not thrive in academic environments to succeed in the workforce.

Pursuing a full-time portfolio career brings its own set of challenges, as highlighted by participants in the Youth Interests Study FGDs. Some individuals expressed concerns about navigating the transition to new ventures, especially as they balance existing commitments with expanding side projects such as managing multiple responsibilities. Others noted difficulties in establishing credibility and accessing reliable resources to support their work in matters such as negotiating fair compensation and handling contractual matters. Additionally, developing a steady client base and building a recognisable online presence were cited as significant hurdles as many struggled with outreach, building trust with clients, and sustaining a pipeline of opportunities. Financial instability remained a key concern, with irregular income cycles making long-term planning difficult, while others grappled with self-doubt, imposter syndrome, and challenges of effectively monetising their skills. These insights illustrate that while a portfolio career offers flexibility, it demands strategic skills in resource management, business development, and self-branding to achieve sustained success.

Employers' Perspective on Side Hustles

Employers' views on side hustles vary across different types of organisations, from small and medium enterprises to multinational corporations. Some, due to the nature of their work, are unable to provide workers the flexibility of work arrangements for side hustles, while others are increasingly recognising its relevance in the evolving employment landscape. Perceptions and policies of employers range from drawing a firm line in relation to conflicts of interest and encouraging declarations, to simply disallowing side hustles on the basis that they may distract workers from their primary employment. That said, the Youth Interests Study survey shows that most spend less than 10 hours weekly on their side hustles (see Figure 4).

Conversely, some organisations acknowledge the potential advantages of side hustles, particularly in fostering skills such as time management, adaptability, and creativity, which can positively influence employees' main roles and indirectly benefit the organisation. They also claim that supporting external pursuits can enhance employee engagement and retention, provided such activities do not conflict with primary job functions. For instance, one employer featured in a *TODAY* commentary reported a reduced turnover rate of 5% after supporting employees' side gigs, far lower than the Asia-Pacific average of 14.5% (Aono, 2024). As economic dynamics shift, employers may have to accommodate the practice of side hustles to remain competitive in

recruiting desirable talents. In fact, given a shift towards a skills economy, side hustles may enhance rather than detract from an employee's appeal.

Building a Skills-First Workforce: Singapore Government Initiatives

The integration of portfolio work and side hustles into the traditional work model can provide individuals with opportunities to develop expertise across disciplines and acquire transferable skills in response to changing industry demands.

Moreover, there appears to be a global shift towards a skills economy (Saidov, 2023). Indeed, a skills-first workforce and economy have similar elements to portfolio work and the gig economy in that recruitment is based on requisite skills as opposed to credentials. Writing for the World Economic Forum, Abakar Saidov, the CEO of Beamery, claimed that:

> "Individual skills, rather than traditional credentials or job titles, are the new currency, or atomic unit of measurement, of work. Rather than thinking about people and jobs, companies must focus on the precise tasks that need to be carried out, and the skills needed to do them. And, in order to stay competitive, they need total talent agility: to move people around as they are needed." (Saidov, 2023)

Governments and employers may wish to consider how portfolio work might impact a skills-driven economy. Its flexibility in allowing individuals to engage in diverse work arrangements may contribute to workforce adaptability, continuous skill development, and a broader talent pool. Recognising how portfolio work aligns with workforce strategies could inform discussions on employment structures, career pathways, and development of policies that support evolving labour market needs.

In Singapore, there is a shifting focus towards building a future-ready workforce through emphasis on transferable skills, upskilling, and reskilling, especially in preparation for an aging workforce (Tan, 2023). Dr Tan See Leng, Minister for Manpower, stated during his keynote address at the UOB #Better Future of Work Festival 2021 that "possible job or even systems-level redesign" in the organisation should also be considered to accommodate this skills-focused approach to recruitment (Tan, 2021).

To grow such a skills-first workforce, Singapore is aiming to nurture future-ready learners and innovators by incorporating digital skills training and promoting fundamental skills applicable across disciplines. The government's 21st Century Competencies framework highlights the importance of adaptive and inventive thinking, communication skills, and civic literacy to prepare students for a technology-driven world. Emphasis is also placed on acquiring problem-solving skills through subjects like mathematics. Digital skills training has been implemented to equip students with an understanding of emerging technologies and their applications across disciplines and subject areas (Ministry of Education, 2024).

Limitations and Future Research

This paper examines the growing trends of side hustles, portfolio work, and diversified income streams as part of the evolving landscape of work, though it has limitations given that these models are still developing. This analysis, based on current data, may not fully reflect the long-term implications for career stability, well-being, and financial security. Systematic studies will be needed to explore if the current momentum behind portfolio and side works will persist or expand, especially given COVID-19, inflation, and (more recently) rising protectionism and impacts of tariffs on such types of work.

Further research, such as a longitudinal study, may give insights into the real and sustained changes in work attitudes and models. Additionally, it could be beneficial to explore the sustainability of these models, identify any emerging drawbacks, and examine the roles of policy and support systems in addressing the needs of diverse socioeconomic groups as they navigate future work environments.

Conclusion

This paper has examined emerging trends in portfolio careers and diversified income streams within the context of Singapore's future workforce and illustrated the impact of this phenomenon on workers, employers, and the nation.

As portfolio work gains traction, establishing clearer definitions for terms such as "side hustle," "fractional work," and "gig economy" in localised contexts will be essential to inform policymaking and ensure accurate worker representation. Further studies need to be conducted to explore the feasibility of implementing clear policies and transparent guidelines on external work engagements, with supervisors playing a key role in setting expectations and boundaries. Over time, it is also essential for tripartite partners, namely the government, employers, and the Labour Movement, to consider the implications of more labour arrangements falling outside of full-time employment contracts tied to Central Provident Fund contributions—what this means for retirement adequacy, labour protection, and even career progression for workers. A collaborative effort among tripartite partners will be key to creating a resilient framework that safeguards workers' financial security and well-being.

In conclusion, the rise of side hustles and portfolio work signifies a shift towards a more agile and versatile workforce. Embracing this trend involves recognising the benefits of allowing workers to pursue their passions and develop their skills outside of traditional employment structures. As the future of work continues to evolve, it is essential for all stakeholders to adapt and embrace these changes for the betterment of individuals, society, and economy.

BIOGRAPHIES

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REFERENCES

Aono, Y. (2024, May 3). Commentary: Why I allow my employees to moonlight—and why other companies should too. *TODAY*. https://www.todayonline.com/commentary/commentary-why-i-allow-my-employees-moonlight-and-why-other-companies-should-too-2415241#:~:text=Despite%20this%2C%20moonlighting%20%E2%80%94%20while%20not,ability%20and%20compensate%20them%20accordingly?

Arthur, M. B., & Rousseau, D. M. (Eds.). (1996). *The boundaryless career: A new employment principle for a new organizational era.* Oxford University Press. https://doi.org/10.1093/oso/9780195100143.002.0001

Boucher, P., Bentzen, N., Laţici, T., Madiega, T., Schmertzing, L., & Szczepánski, M. (2020). *Disruption by technology: Impacts on politics, economics and society* (In-Depth Analysis Paper). European Parliamentary Research Service. https://www.europarl.europa.eu/thinktank/en/document/EPRS_IDA(2020)652079

Bracy, C., & Dark, M. (2023). The ghost workforce the tech industry doesn't want you to think about. *Stanford Social Innovation Review*. https://doi.org/10.48558/5NBS-DM30

Cambridge University Press. (n.d.-a). Side hustle. In *Cambridge Dictionary*. Retrieved May 21, 2025, from https://dictionary.cambridge.org/dictionary/english/side-hustle

Cambridge University Press. (n.d.-b). Portfolio worker. In *Cambridge Dictionary*. Retrieved May 21, 2025, from https://dictionary.cambridge.org/dictionary/english/portfolio-worker?q=portfolio+working

Ford. (2024). *Working for balance*. https://corporate.ford.com/microsites/ford-trends-2024/working-for-balance.html

Goh, C., & Yeo, N. (2023, October 18). TODAY Youth Survey: 74% think they could be retrenched at least once, amid strong belief in taking responsibility to stay relevant. *TODAY*. https://www.todayonline.com/singapore/today-youth-survey-skills-retrenchment-2281206

Handy, C. (1989). *The age of unreason.* Harvard Business School Press. https://archive.org/details/ageofunreason00hand/mode/2up

Hudson, J. (2024, May 15). Why side hustles and portfolio careers are the future of work. *Forbes*. https://www.forbes.com/sites/jameshudson/2024/05/15/why-portfolio-careers-are-the-future-of-work/

Ministry of Education. (2024, March 30). *Goal of Education is to nurture future ready learners and innovators*. https://www.moe.gov.sg/news/forum-letter-replies/20240330-goal-of-education-is-to-nurture-future-ready-learners-and-innovators

Saidov, A. (2023, October 12). *The skills economy: What is it and what does it mean for talent?* World Economic Forum. https://www.weforum.org/agenda/2023/10/skills-economy-what-is-it/

Spreitzer, G., & Porath, C. (2012). Creating sustainable performance. *Harvard Business Review*, *90*(1–2), 92–99. https://hbr.org/2012/01/creating-sustainable-performance

Tan, S. L. (2021, November 5). *Keynote address at UOB #Better Future of Work Festival: Dr Tan See Leng, Minister for Manpower*. Ministry of Manpower. https://www.mom.gov.sg/newsroom/speeches/2021/1105-speech-by-minister-for-manpower-at-uob-better-future-of-work-conference

Tan, S. L. (2023, July 19). *Opening address at DBS FutureForward Week: Dr Tan See Leng, Minister for Manpower, DBS Auditorium*. Ministry of Manpower. https://www.mom.gov.sg/newsroom/speeches/2023/0719-opening-address-by-minister-for-manpower-dr-tan-see-leng-at-dbs-futureforward-week

Zalizan, T. (2022, November 4). TODAY Youth Survey: 2 in 5 plan to switch jobs in next 6 months; remote working a must-have for many. *TODAY*. https://www.todayonline.com/singapore/today-youth-survey-switching-jobs-2033756#:~:text=Reflecting%20popular%20beliefs%20about%20the%20desire%20for,their%20long%2Dterm%20goals%20without%20working%20beyond%20traditional

Retrenchment Repercussions: Effects on Survivors

Jia En Kenneth Woong, Daniel J. McAllister, and Audrey Chia

Abstract

This study shows how perceptions of fairness during a retrenchment affect the remaining employees' mental and physical well-being and may drive them to consider leaving the organisation voluntarily. These findings are particularly crucial for companies that are planning or undergoing a retrenchment exercise. We recruited 220 participants from the electrical and electronics sector in Singapore who had survived a retrenchment exercise within the last 12 months. Results of regression analyses and mediation testing supported our hypotheses. We provide practical recommendations based on the findings.

Introduction

Although retrenchments are becoming increasingly prevalent in Singapore (H. Ng, 2024), organisations may be unprepared to implement them effectively. Common pitfalls include neglecting human considerations such as job attitudes and health, while prioritising cost pressures (Band & Tustin, 1995; Ryan & Macky, 1998). Yet, proficient execution is crucial as the way retrenchments are implemented can adversely affect both employees and their organisations. These effects extend beyond the retrenched individuals to those who retain their jobs ("survivors"). Retrenchment survivors may sympathise with their retrenched coworkers and develop negative attitudes towards their employers.

This report summarises the key findings from a study of the effects of retrenchment on remaining employees. We hypothesise that survivor appraisals of the fairness or unfairness of the retrenchment process, reflected in how retrenched colleagues are treated, would affect the psychological and physical well-being of survivors. We propose that work engagement and somatic symptoms mediate the negative relationship between perceived organisational justice and the intention to leave. Finally, we hypothesise that turnover intentions drive job search behaviours. The findings of this study show support for our hypotheses. They contribute to research and policy and suggest practical implications for managers engaged in implementing retrenchment.

As research on retrenchment survivors in Singapore has been limited, this research is timely and relevant. It would be beneficial for practitioners and organisations alike to consider the implications and recommendations of this study. Considering our findings, we call for further research to identify best practices for implementing strategic change in ways that best serve the interests of both employees and their organisations.

Methods

The study was conducted with the assistance of the National Trades Union Congress. Before the commencement of the study, ethical clearance was obtained from the Ethics Review Committee of NUS Business School (BIZ-MNO-23-0906). A total of 220 employees employed in organisations where a retrenchment exercise had been undertaken within the last 12 months participated (tenure M = 9.77 years, age M = 43.82 years). These participants worked in the electrical and electronics sector and were recruited through the United Workers of Electrical and Electronics Industries in Singapore. Respondents were provided with an online link to our anonymous survey that contained our study measures, and they received $5 in Singapore dollars as a token of appreciation for their participation.

Measures used in this study were drawn from previously published research and adapted for the Singaporean context. Participants provided their responses to questions on a 6-point Likert scale (1 = Strongly Disagree; 6 = Strongly Agree). This is except for the Somatic Symptom Scale which retained its original 5-point Likert scale (1 = Never; 5 = Very much), and the job search behavioural scale where respondents simply indicated whether they had performed certain job search activities.

We shortened Colquitt's (2001) measure of the four dimensions of justice to a 15-item scale—four items each for the procedural, interpersonal, and informational dimensions of justice, and three items for distributive justice. This was done to make the scale easier for participants, who were mostly blue-collar workers, to understand. Examples of items include: interpersonal justice, "Management have treated me with respect"; distributive justice, "The outcome was based on performance in the organisation"; procedural justice, "Employees were able to appeal the outcome"; and informational justice, "Management explained the layoff procedures to employees thoroughly." The alpha reliability was .89.

We used the 8-item Somatic Symptom Scale (SSS-8) to measure the occurrence of health complaints such as pain, sleeping disorders, and gastrointestinal symptoms (Gierk et al., 2014, 2015). A sample item was whether the participant had experienced "back pain" within the last 30 days. The alpha reliability was .88.

Survivors' job search behaviour questions were drawn from Blau's (1994) scale and included eight items that were appropriate for the digital channels of recruitment in the Singaporean context. A sample item was "Checked online job portals (e.g. Indeed, LinkedIn, MyCareersFuture, JobsStreet, JobsDB, etc.) or career sites of companies." Respondents only indicated whether they had engaged in the listed behaviours. The alpha reliability was .89.

Results

Table 1 presents the descriptive statistics and reliability for the five constructs we examined in our study. The reliability for all scales was highly satisfactory (Cronbach's alpha values were all above .70). Confirmatory factor analysis results showed that the five-factor model provided a significantly better fit for the data than the alternative four-factor model, thus supporting the measurement properties of the data.

Table 1

Descriptive Statistics and Reliabilities of the Measures Used

Pearson's Correlations

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Age	43.82	9.79	—						
2. Tenure	9.77	7.41	.41***	—					
3. Overall Justice	3.63	1.07	–.09	.08	(.95)				
4. Work Engagement	4.12	1.19	.05	.13	.43***	(.88)			
5. Somatic Complaints	2.01	0.83	–.17*	.02	–.20**	–.28***	(.88)		
6. Turnover Intentions	3.32	1.48	.04	–.19**	–.26***	–.38***	.34***	(.92)	
7. Job Search	1.43	0.36	–.03	–.22***	–.31***	–.28***	.22**	.57***	(.89)

Note. $N = 220$, * $p < .05$, ** $p < .01$, *** $p < .001$. Cronbach's alpha values are in the parentheses.

We used regression and bootstrapped mediation analysis to test our hypotheses concerning the indirect effects (Hayes, 2012). Table 2 shows the unstandardised regression coefficients and their corresponding standard errors. Regression analysis results show that justice perceptions were positively associated with work engagement (Schaufeli et al., 2019) and negatively associated with somatic complaints (self-rated physical health) (Gierk et al., 2015). Bootstrapping analyses of mediation showed that the relationship between justice perceptions and turnover intentions was mediated by work engagement ($\beta = -0.20$, SE = 0.05, $p < .001$) and somatic complaints ($\beta = -0.08$, SE = 0.03, $p < .001$). Regression results also showed a positive relationship between turnover intentions and job search behaviours ($\beta = 0.13$, SE = 0.02, $p < .001$). In sum, the results provided support for all three hypotheses of our study.

Table 2

Regression Analysis Predicting Turnover Intentions and Job Search Behaviours

Independent Variables	Work Engagement			Somatic Complaints			Turnover Intentions			Job Search		
	β		*SE*	β		*SE*	β		*SE*	β		*SE*
Intercept	2.38	***	.26	2.57	***	.20	4.33	***	.50	1.21	***	.13
Overall Justice	.48	***	.07	–.15	**	.05	–.13		.09	-.06	**	.02
Work Engagement	—		—	—		—	–.35	***	.09	.00		.02
Somatic Complaints	—		—	—		—	.43	***	.11	.00		.03
Turnover Intentions	—		—	—		—	—		—	.13	***	.02
R^2	.18***			.04**			.21***			.35***		
Adjusted R^2	.18***			.03**			.20***			.34***		

Note. $N = 220$, * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

Our findings show that employees pay attention to how their retrenched coworkers are (mis)treated, and employee perceptions of unfairness have enduring effects that result in psychological disengagement and frequent somatic complaints such as bodily pains. In turn, reduced engagement and increased somatic complaints drive employee turnover intentions (Gierk et al., 2015; Mai et al., 2016). This is because perceived unfairness leads to negative emotions and unhealthy behaviours, that eventually result in the risk of individuals' poor health (Greenberg, 2010; Herr et al., 2018). Our results confirmed our hypotheses that survivors' perceptions of unjust treatment are associated with intentions to leave the organisation. This is a concern, given the high replacement costs associated with voluntary employee departure (Hancock et al., 2011; Hillmer et al., 2004). These findings from Singapore echo ones from other countries which have shown that bystanders' psychological reactions and the likelihood of turnover depend on their perceptions of managerial treatment at work (Mai et al., 2016; K. Ng et al., 2022; Wu & Wu, 2019).

There are limitations to our study. First, this was a cross-sectional study where all items were measured within the same questionnaire at a single point in time. Future research could be conducted in multiple waves to remove the potential effects of common-method variance. Second, we did not collect data from workers who had been retrenched from the same organisation. The collective perceptions of injustice of both survivors and retrenched individuals on the turnover of continuing employees could be addressed in future research. A third limitation was that we did not measure the retrenchment survivors' perceptions of organisational justice towards themselves during the retrenchment process. It is possible that survivors who felt they had been mistreated also appraised the treatment of their retrenched coworkers as unfair. In future research, we would like to control for those effects and isolate the incremental effects of injustice towards retrenched workers.

These limitations notwithstanding, we propose three evidence-based recommendations for managers and organisations. First, managers should be mindful of the potential adverse effects of retrenchment on their employees. These can be measured through anonymous surveys that provide some sense of psychological safety, but still allow management to identify specific problem areas for more targeted intervention (Creswell, 2017). Second, companies should seek to enhance psychological capital by nurturing the resilience of employees. Resilience is especially crucial during and after adverse events such as retrenchment. Physical activity interventions, peer-support initiatives, and coaching-style programmes can all boost resilience (Agarwal et al., 2020; Vanhove et al., 2015; Williams et al., 2018). Third, organisations can

introduce group-level interventions such as opportunities for interaction and engagement. In addition, organisations could train their leaders with knowledge and skills to enable self-efficacy and personal development among the employees (Mazzetti et al., 2021). These interventions provide access to organisational resources that enhance employees' personal resources (Knight et al., 2017).

Conclusion

The process of retrenchment is inherently challenging and multifaceted. It has effects on multiple stakeholders. Therefore, it requires careful management and a focus on fairness for all employees, retrenched or remaining employees. Our study revealed that perceptions of unfairness can result in psychological disengagement and somatic complaints, and ultimately, voluntary employee departures. A consistent focus on psychological safety and mental resilience among employees can help buffer these negative effects. When managers communicate and carry out retrenchments in a fair and transparent manner, they can significantly mitigate the impact on the well-being and retention of survivors.

AUTHOR CONTRIBUTIONS

The paper was written by Woong Jia En Kenneth as partial fulfilment of his Honours Dissertation presented to the NUS Business School, National University of Singapore. It was co-supervised by Associate Professors Daniel J. McAllister and Audrey Chia. All authors have read and agreed to the published version of the manuscript.

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REFERENCES

Agarwal, B., Brooks, S. K., & Greenberg, N. (2020). The role of peer support in managing occupational stress: A qualitative study of the sustaining resilience at work intervention. *Workplace Health & Safety*, *68*(2), 57–64. https://doi.org/10.1177/2165079919873934

Band, D. C., & Tustin, C. M. (1995). Strategic downsizing. *Management Decision*, *33*(8), 36–45. https://doi.org/10.1108/00251749510093923

Blau, G. (1994). Testing a two-dimensional measure of job search behavior. *Organizational Behavior and Human Decision Processes*, *59*(2), 288–312. https://doi.org/10.1006/obhd.1994.1061

Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology*, *86*(3), 386–400. https://doi.org/10.1037/0021-9010.86.3.386

Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, *68*, 18–26. https://doi.org/10.1146/annurev-psych-042716-051139

Gierk, B., Kohlmann, S., Kroenke, K., Spangenberg, L., Zenger, M., Brahler, E., & Lowe, B. (2014). The Somatic Symptom Scale–8 (SSS-8): A brief measure of somatic symptom burden. *JAMA Internal Medicine*, *174*(3), 399–407. https://doi.org/10.1001/jamainternmed.2013.12179

Gierk, B., Kohlmann, S., Toussaint, A., Wahl, I., Brunahl, C. A., Murray, A. M., & Lowe, B. (2015). Assessing somatic symptom burden: A psychometric comparison of the Patient Health Questionnaire-15 (PHQ-15) and the Somatic Symptom Scale-8 (SSS-8). *Journal of Psychosomatic Research*, *78*(4), 352–355. https://doi.org/10.1016/j.jpsychores.2014.11.006

Greenberg, J. (2010). Organizational injustice as an occupational health risk. *The Academy of Management Annals*, *4*(1), 205–243. https://doi.org/10.5465/19416520.2010.481174

Hancock, J. I., Allen, D. G., Bosco, F. A., McDaniel, K. R., & Pierce, C. A. (2011). Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management*, *39*(3), 573–603. https://doi.org/10.1177/0149206311424943

Hayes, A. F., (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. The Ohio State University. http://www.afhayes.com/ public/process2012.pdf

Herr, R. M., Bosch, J. A., Loerbroks, A., Genser, B., Almer, C., van Vianen, A. E., & Fischer, J. E. (2018). Organizational justice, justice climate, and somatic complaints: A multilevel investigation. *Journal of Psychosomatic Research*, *111*, 15–21. https://doi.org/10.1016/j.jpsychores.2018.05.003

Hillmer, S., Hillmer, B., & McRoberts, G. (2004). The real costs of turnover: Lessons from a call center. *Human Resource Planning*, *27*(3), 34–41.

Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, *38*(6), 792–812. https://doi.org/10.1002/job.2167

Mai, K. M., Ellis, A. P., Christian, J. S., & Porter, C. O. (2016). Examining the effects of turnover intentions on organizational citizenship behaviors and deviance behaviors: A psychological contract approach. *Journal of Applied Psychology*, *101*(8), 1067–1081. https://psycnet.apa.org/doi/10.1037/apl0000115

Mazzetti, G., Robledo, E., Vignoli, M., Topa, G., Guglielmi, D., & Schaufeli, W. B. (2021). Work engagement: A meta-analysis using the job demands-resources model. *Psychological Reports*, *126*(3), 1069–1107. https://doi.org/10.1177/00332941211051988

Ng, H. (2024, January 31). Retrenchments in Singapore more than doubled in 2023: MOM report. *CNA*. https://www.channelnewsasia.com/singapore/retrenchments-double-2024-fourth-quarter-mom-labour-market-advance-release-4087516

Ng, K., Niven, K., & Notelaers, G. (2022). Does bystander behavior make a difference? How passive and active bystanders in the group moderate the effects of bullying exposure. *Journal of Occupational Health Psychology*, *27*(1), 119–135. https://psycnet.apa.org/doi/10.1037/ocp0000296

Ryan, L., & Macky, K. A. (1998). Downsizing organizations: Uses, outcomes and strategies. *Asia Pacific Journal of Human Resources*, *36*(2), 29–45. https://doi.org/10.1177/103841119803600204

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement. *European Journal of Psychological Assessment*, *35*(4), 577–591. https://doi.org/10.1027/1015-5759/a000430

Vanhove, A. J., Herian, M. N., Perez, A. L., Harms, P. D., & Lester, P. B. (2015). Can resilience be developed at work? A meta-analytic review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology*, *89*(2), 278–307. https://doi.org/10.1111/joop.12123

Williams, A. L., Parks, A. C., Cormier, G., Stafford, J., & Whillans, A. (2018). Improving resilience among employees high in depression, anxiety, and workplace distress. *International Journal of Management Research*, *9*(1–2), 4–22.

Wu, S.-H., & Wu, C.-C. (2019). Bullying bystander reactions: A case study in the Taiwanese workplace. *Asia Pacific Journal of Human Resources*, *57*(2), 191–207. https://doi.org/10.1111/1744-7941.12175

RESEARCH LETTER

The Impact of a Vocational Training "Plus" Programme on Employment and Income

Abu S. Shonchoy, Tomoki Fujii, and Selim Raihan

Abstract

Following a Randomised Controlled Trial in Northern Bangladesh, this study explores the barriers to rural youth migration to urban employment hubs. By implementing a vocational training "plus" programme facilitating apparel sector employment, the study revealed significant and persistent effects of the programme on income and employment, primarily due to the addition of a stipend and on-the-job training components. Treated participants experienced significant income and remittance increases, alongside reduced income poverty, attributed to the lower job search costs and job–fit risks. Notably, the on-the-job paid apprenticeship offered a benefit–cost ratio of 8.85, demonstrating its cost-effectiveness for programme scalability.

Introduction

Vocational training programmes are widely recognised in development policy literature as essential for building a skilled labour force capable of driving economic growth, enhancing productivity, and fostering prosperity. However, these programmes often fall short of their goals, even in developed countries with favourable institutional environments, primarily because they exclusively focus on the acquisition of job skills.

Through a rigorous Randomised Controlled Trial experiment, this study provides empirical evidence that vocational programmes can be highly effective once the critical issues, primarily credit constraints, industry demand, and job linkage, are appropriately addressed.

The experiment for this work is set in Bangladesh, zeroing in on the country's booming ready-made garment (RMG) sector, which has fuelled the country's recent economic growth. The study identifies a puzzling phenomenon where the RMG sector (which is concentrated in Dhaka and Chittagong and attracts migrant workers from across the country) has seen disproportionately low migrant inflow from Northern Bangladesh—the most poverty-stricken region in the country. Thus, the study addresses an important policy-relevant question: What factors prevent disadvantaged youth in Northern Bangladesh from seizing opportunities in the RMG sector despite several past targeted vocational training programmes?

This study is the first of its kind in Bangladesh and the second in South Asia, rigorously evaluating job training impact through a Randomised Controlled Trial setting. Evidence of vocational training programmes in developing countries had primarily focused on Latin America until recently.

Method

This study involved a randomised field experiment with the help of a local NGO—Gana Unnayan Kendra—that targeted seasonally unemployed youth from rural Northern Bangladesh and provided interventions to promote formal employment in the RMG sector.

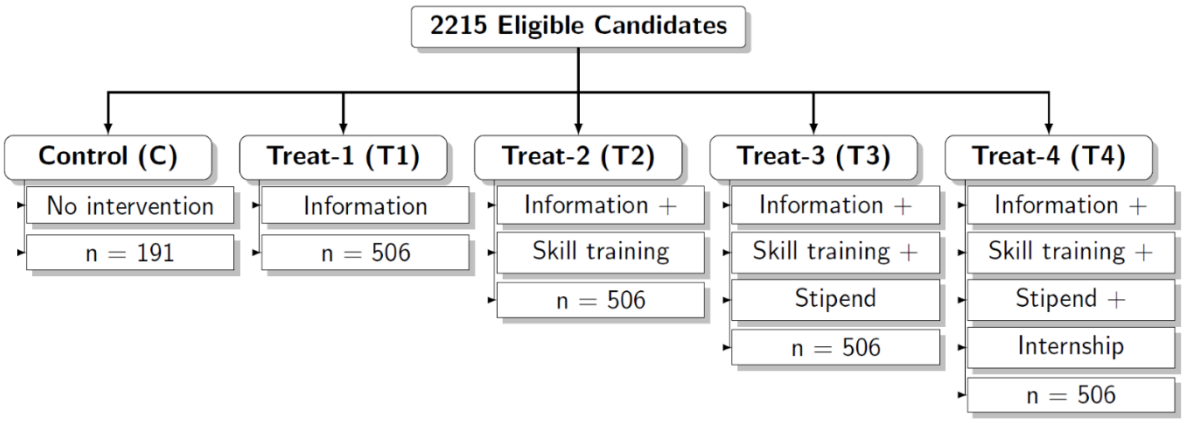
The study sample, selected through a participatory rural appraisal followed by a short survey, comprised individuals meeting the specific eligibility criteria: irregular income, seasonal unemployment, aged 18–30, originating from moderate or ultra-poor households, and willing to change occupations. The baseline survey included 2,215 eligible participants with an average age of 22.42. Notably, approximately 30% of the eligible participants were females, 52% belonged to ultra-poor households, 71% were unemployed, and none had attained education beyond the secondary level.

Sample participants were allocated randomly into an experimental "control" group (with no training-related intervention) or one of the following four treatment groups with different job-related interventions (Figure 1): (i) day-long job-related information session (T1, "Information"); (ii) T1 plus a 1-month-long residential skills training (T2, "Training"); (iii) T2 plus a stipend to cover the migration cost and forgone income (T3, "Stipend"); and (iv) T3 plus an on-the-job training (OJT) programme, where a 1-month paid apprenticeship (internship), in a factory located in Dhaka, was included as part of the training (T4, "OJT").

The cost per person in U.S. dollars for each treatment intervention varied as follows: T1: $2, T2: $100, T3: $145, and T4: $185.

Figure 1

Trial Design



Results

The study found that skills training uptake and completion rates were higher when the training was combined with a stipend.

Interestingly, men showed a drop in programme uptake and completion rates when offered only the training treatment (T2), forgoing training for immediate income opportunities in the local area. Conversely, women experienced significant drops in uptake and completion rates when the OJT treatment was added to training and stipend, mainly due to conflicting family obligations and pressures to not leave the home.

Notably, the 6-month follow-up survey showed that the stipend treatment (T3) boosted RMG sector employment by an additional 8.4 percentage points, and the OJT treatment (T4) increased it by a further 14 percentage points. Conversely, the information campaign (T1) and standard vocational training (T2) had no significant impact on employment, echoing the past findings on vocational training programme limitations (Bloom et al., 1997; Card et al., 2018; Fox & Kaul, 2018; LaLonde, 1995; McKenzie, 2017; Ryan, 2001; Schochet et al., 2008).

The study also revealed that about 25% of those receiving OJT were employed during the 6-month follow-up survey—the highest rate among all treatment groups. Additionally, participants in stipend and OJT groups also saw positive impacts on income, remittance flow, household assets, and income poverty reduction. These findings persisted even after 18 months.

These results (Table 1) suggested that supplementing vocational training programmes with stipends and OJT components could boost their effectiveness by reducing forgone income and job–fit risks, potentially leading to significant improvements in the programme outcomes.

Table 1

Treatment Uptake Decision of Participants

Dependent Variable: Treatment Uptake (dummy)	(1)	(2)	(3)
(T1) [Information]	0.762***	0.771***	0.760***
	(0.024)	(0.025)	(0.033)
(T2) [T1 + Skill training]	0.584***	0.594***	0.579***
	(0.026)	(0.026)	(0.034)
(T3) [T2 + Stipend]	0.760***	0.770***	0.766***
	(0.029)	(0.029)	(0.037)
(T4) [T3 + On-the-job training]	0.614***	0.624***	0.621***
	(0.025)	(0.025)	(0.036)
Observations	2,215	2,215	2,215
R-squared	0.183	0.196	0.321
Mean of the control group	0	0	0
P-value for joint significance	0.00	0.00	0.00
Skill-Training effect: S = T2 - T1 (beta)	-0.178	-0.177	-0.181
Skill-Training effect: S = T3 - T2 (p-value)	0.00	0.00	0.00
Stipend effect: C = T3 - T2 (beta)	0.176	0.176	0.187
Stipend effect: C = T3 - T2 (p-value)	0.00	0.00	0.00
OJT effect: A = T4 - T3 (beta)	-0.146	-0.146	-0.145
OJT effect: A = T4 - T3 (p-value)	0.00	0.00	0.00
Control for Phase	Yes	Yes	Yes
Control for observables		Yes	Yes
Control for village			Yes

Discussion

This study found evidence that merely offering skills training, as vocational programmes do, is inadequate. Additional barriers beyond skills shortages can impede the realisation of desired outcomes from these programmes, notably credit constraints and the perceived risk of not finding suitable employment after programme completion.

The study offered key "plus" components to enhance vocational training programmes' efficacy as a policy initiative. It presented a robust framework for aligning the skills training initiatives with industry demands by demonstrating the impact of adding stipend and OJT components to purely skills-focused vocational programmes. The study found that groups receiving stipend and OJT treatments showed significant increases in job acquisition and retention: 6.20 percentage points and 17.10 percentage points, respectively, compared to the control group.

The study further highlighted the positive impact of the stipend and OJT treatments on continued employment, remittance flow, household assets, and income poverty reduction.

Policymakers can thus enhance vocational training programmes by incorporating the stipend and OJT components. This integration helps mitigate uncertainties surrounding employment outcomes by acclimating trainees to the demands and dynamics of the intended employment settings while offering financial stability during the OJT phase. Additionally, the OJT treatment allows employers to assess trainees' technical abilities, helping meet the industry demand more efficiently.

The study also highlighted the strong social barriers facing females, hindering their participation in training programmes and labour markets. These include the traditional view of women as primary caregivers, religious practices like purdah, and encumbering societal expectations. These barriers persist, underscoring the need for targeted policy efforts.

Conclusion

This study offers policymakers a framework to enhance the effectiveness of vocational training programmes. It highlights two critical yet typically overlooked barriers to employment that render such programmes largely ineffective: credit constraints and uncertainty in job prospects or job fit.

The study suggests that vocational training programmes can be significantly improved by integrating two key components: a stipend to cover the forgone income and job search expenses; and a short-term, paid on-the-job apprenticeship, facilitating future employment.

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REFERENCES

Bloom, H. S., Orr, L. L., Bell, S. H., Cave, G., Doolittle, F., Lin, W., & Bos, J. M. (1997). The benefits and costs of JTPA Title II-A programs: Key findings from the National Job Training Partnership Act study. *Journal of Human Resources*, *32*(3), 549–576. https://doi.org/10.2307/146183

Card, D., Kluve, J., & Weber, A. (2018). What works? A meta analysis of recent active labor market program evaluations. *Journal of the European Economic Association*, *16*(3), 894–931. https://doi.org/10.1093/jeea/jvx028

Fox, L., & Kaul, U. (2018). *The evidence is in: How should youth employment programs in low-income countries be designed?* (World Bank Policy Research Working Paper No. WPS8500). http://documents.worldbank.org/curated/en/837861530219586540/The-evidence-is-in-how-should-youth-employment-programs-in-low-income-countries-be-designed

LaLonde, R. J. (1995). The promise of public sector-sponsored training programs. *Journal of Economic Perspectives*, *9*(2), 149–168. http://doi.org/10.1257/jep.9.2.149

McKenzie, D. (2017). How effective are active labor market policies in developing countries? A critical review of recent evidence. *The World Bank Research Observer*, *32*(2), 127–154. https://doi.org/10.1093/wbro/lkx001

Ryan, P. (2001). The school-to-work transition: A cross-national perspective. *Journal of Economic Literature*, *39*(1), 34–92. http://doi.org/10.1257/jel.39.1.34

Schochet, P. Z., Burghardt, J., & McConnell, S. (2008). Does job corps work? Impact findings from the national job corps study. *American Economic Review*, *98*(5), 1864–1886. http://doi.org/10.1257/aer.98.5.1864

REVIEW

Career Progression Model for the Skilled Trades

Cecilia Yee and Soon-Hock Kang

Abstract

The essential skilled trades sector is experiencing a shrinking labour pool as its current pool of workers retire with a shrinking younger cohort willing to take over. While a smaller younger labour pool—as a direct consequence of falling fertility rates—offers a partial explanation, the other reason revolves around the negative stereotypes that accompany jobs in the sector, discouraging new entrants. To improve the sector, the Labour Movement has mooted a "Career Progression Model" for the skilled trades. This paper presents an exploratory review of pertinent country examples and proposes key elements for this model.

The Skilled Trades in Singapore

According to the Singapore Labour Force Survey 2022 (Manpower Research and Statistics Department, 2023), more than half of local tradespersons are aged above 50 years, and there was a 40%–50% decrease in local labour participation from 2012 to 2022 (Hidaya, 2023; Singapore Department of Statistics [DOS], 2023, 2024). The widening wage gap between graduates from the Institutes of Technical Education (ITEs) and universities—where the median starting salary for a university graduate is almost double that of an ITE graduate—has been a concerning trend for the skilled trades industries, and policymakers are concerned (Dayani, 2023; Zalizan, 2022). In 2022, the average salary of trade workers was $2,600 in Singapore dollars, a wage level that remained close to the Workfare Income Supplement threshold for lower-wage workers (Yeo, 2023). The challenge to establishing a strong core of skilled tradespersons could be attributed to persistent stigmatisation of the industry as "dirty, dangerous and demeaning" (O'Reilly-Briggs, 2011). Skilled trades are occupations that typically include complex activities, requiring technical skills and ample knowledge, about a specific trade (Canadian Council of Directors of Apprenticeship, 2007, as cited in Pyper, 2008).

The National Trades Union Congress (NTUC) had indicated its intention to explore attracting local apprentices and protect the skilled trades from becoming irrelevant and proposed creating well-defined career progression pathways for tradespeople (Ang, 2023). Prime Minister Lawrence Wong, the then Deputy Prime Minister, noted at the 2023 May Day Rally that the government's refreshed compact with workers will centre on skills training and lifelong learning and in particular, placing attention on those in vocational and technical roles to increase the opportunities for them so that "they can secure better salaries and career paths in the professions they have trained in and have the aptitude for". He added that having a collaborative tripartite partnership in Singapore will continue to provide a sustainable and competitive advantage that improves the lives of workers, while promoting economic growth for all Singaporeans (I. H. Tan, 2023).

The NTUC had earlier mooted a "Career Progression Model" (CPM) to support skilled essential tradespersons (NTUC, 2023; C. L. Tan et al., 2023). Stemming from this, this paper sought to address the following research question: "What will a CPM for the skilled trades in Singapore entail?" For this exploratory review, pertinent country examples with established skills trade sectors were identified and formed the basis for the subsequent discussion. Employing country examples, we identify three elements pertinent to a proposed CPM for the skilled trades industry—public–private partnerships (PPPs), management of apprenticeship pathways, and national qualifications framework. In particular, we demonstrate how these elements can offer a framework that will: (a) secure a pipeline of vocationally trained apprentices; (b) maximise the potential for new career tradespersons through a holistic apprenticeship pathway; and (c) ensure the competitiveness of local tradespersons with relevant qualifications frameworks and skill upgrading opportunities.

Salient Features of Different Professionalisation Frameworks

Fundamental Principles in Professionalising the Skilled Trades Industries

PPPs in vocational education, training, and career progression strategies are prevalent because they serve as an effective blend of both "administrative and market-based regulation tools" that accommodate the features of both "market and centrally controlled" economies (Vertakova & Plotnikov, 2014). Economies with strong PPPs can rely on the synergy between public and private capital in managing collective skills formation systems. Concomitantly, effective PPPs could result in more "effective resource mobilisation and improvement of educational quality" and thus, serve to close the specific skill gaps in labour markets (Amornvuthivorn, 2016). Therefore, a fundamental step to developing a CPM is to establish strong institution–industry collaboration to secure a reliable talent pipeline, which would then provide opportunities for career progression in the skilled trades industries.

Applying Public–Private Partnerships Mechanisms to Address the Supply of Apprentices

Amornvuthivorn's (2016) analysis of different PPP strategies in both Singapore and the United States suggested that, in the context of career progression pathways, PPP strategies can be institutionalised in both countries. She identified that, in terms of programme design, Singapore's ITE presented strong connections with the private sector, e.g. Centres of Excellence, traineeships, industry-approved training centres, certified "on-the-job" training centres, industry project opportunities, career service centres, and training grant funding. At the same time, by engaging industry as a close partner the system in Singapore encourages up-to-date training that emulates real-world challenges, combining both an apprenticeship and a school-based system with the latter requiring teachers who are subject matter experts (Tucker, 2012; Oviawe, 2018).

The prevalence of PPPs in more centralised and decentralised types of economies is fundamental towards developing strategies for CPMs, especially when establishing a pipeline of well-trained and qualified apprentice tradesperson. The following country study illustrates that the success and sustainability of CPMs are contingent on the extent to which government intervention is present in national apprenticeship systems.

Country Study: Germany's Dual System Model

Originating from Germany and mostly employed in European countries, the dual system model equips early-career apprentices through both "school-based" and "workplace-based" vocational skills training via cooperation between Small and Medium Enterprises (SMEs) and public vocational schools which is regulated by law (Markowitsch & Wittig, 2022). The dual training system involves employers voluntarily, who view this as an investment for their future workforce by training them according to their business needs (Organisation for Economic Co-operation and Development [OECD] & International Labour Organization [ILO], 2017). With apprenticeship pathways for over 330 occupations, the dual system model is a fundamental pillar in securing the labour supply of qualified skilled workers (Federal Institute for Vocational Education and Training, 2016). Although the dual system model is synonymous with addressing the supply needs of a broad range of skilled trade professions (primarily "higher-skilled" trades), it also offers useful lessons for the "low-skilled" trades.

The dual system model in Germany is regulated by both the federal and state governments, where the latter is responsible for schools and higher education (where training occurs in vocational schools), while the former regulates the vocational education and training (VET) system (where training occurs within companies). All training regulations need to be nationally recognised after development and endorsement at the federal level, while curricula for part-time vocational schools are developed and endorsed by public officials from the state government (OECD, 2014, 2022; OECD & ILO, 2017). Additionally, social partners and employers may propose changes to the regulations or introduce new training, allowing local stakeholders to assert some influence in the development of vocational training curricula. Lastly, chambers or trade unions are an important intermediary in the German VET system that assists to monitor, consult, and control institutions, providing guidance to participating companies to assess suitability of the company and its instructors (Hellwig, 2006; OECD & ILO, 2017). They are also responsible for conducting nationally standardised examinations to ensure recognition of the qualifications of apprentices. There are intercompany training centres established in Germany which help small and highly specialised companies to engage in apprenticeships when the company is unable to cover all aspects of the training. Regulated and funded by the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie), these training centres are nonetheless owned by the chambers (Federal Ministry for Economic Affairs and Energy, 2022; OECD, 2022).

This arrangement allows students to learn vocational skills from a wide range of fields. There are also pre-apprenticeship programmes, or basic vocational training, offered to those unable to find suitable apprenticeships. Apart from on-the-job training and career pathways, education also plays a crucial role in the dual system model. Germany follows the International Standard

Classification of Education (ISCED), an international classification reference for organising education programmes and related qualifications by levels and fields, with nine education levels ranging from 0 to 8, starting from early childhood education to a doctoral or equivalent level (Eurostat, 2023). In this classification, enrolled apprentices are categorised at ISCED level 3, and any upper secondary graduates seeking occupational training or VET graduates looking for a change in career will apply for "second-cycle" programmes pegged at level 4. Working graduates wishing to upskill can enrol into higher vocational preparatory courses, where completion of the level-5 examination allows them to hold the title of a certified occupational specialist. Alternatively, VET graduates may take up courses offered by trade and technical schools (ISCED level 6), take up professionally orientated tertiary education (ISCED levels 5–7), or pursue a bridging course for tertiary education (OECD, 2022).

Employment Intermediaries

Intermediaries like industry organisations, employer groups, trade unions, and chambers of commerce assist employers to navigate the apprenticeship system (mobilising businesses, seeking appropriate training places) and negotiate with governments to improve employer engagement in apprenticeships (Canadian Council of Directors of Apprenticeship, 2007). These intermediaries require extensive knowledge of both the training system and local setting in order to translate national schemes into practice and provide advice where required. The customised placement of trainees in enterprises ("PV" programme) introduced by the German Federal Ministry for Economic Affairs and Energy in 2007 is one such example, ensuring that SMEs could access talents for dual vocational training. PV agencies are nonprofit organisations, e.g. chambers of craft (OECD & ILO, 2017, p. 100). These agencies determine the skill needs and recruit apprentices from local technical education schools and recruitment events. They also provide counselling, possible workplace-related training, and placement assistance for trainees and apprentices. SMEs and apprentices held the usefulness and efficacy of PV agencies in high regard for connecting the appropriate apprentices to the different SMEs (OECD, 2014; OECD & ILO, 2017, p. 102).

Developing Skilled and Motivated Workers: The Role of Apprenticeships and Lessons from Australia

There are many aspects to consider when designing apprenticeship pathways for a skilled tradesperson but none as salient as fostering supportive workplace relationships via conducive learning environments, best illustrated by Australia's Group Training Organisations (GTOs) model.

Workplace Relationships, Learning Environments, and Skills Beyond Technical Competency

Through a comparison of the inherent differences between "off-the-job" and "on-the-job" training, Harris et al. (2003) looked at how different learning objectives and training environments played a role in developing a "competent tradesperson". They found that competency was "heavily dependent" on the adaptability of apprentices in "integrating and synthesising" a diverse array of vocational knowledge taught by vocational trainers, at various points in an apprenticeship. Practically, this means that it is crucial for apprenticeship programmes to focus on developing a core of skilled tradespersons who remain adaptable in learning as well as acquiring an array of both technical knowledge and soft skills.

One long-term strategy to facilitate holistic skills development is to inculcate a mindset of continuous learning and skills training in a skilled tradesperson, preferably facilitated with support from a network of supportive apprentices. Research on the Australian construction industry pointed out that apprentices would maximise their potential in their transition towards becoming skilled tradespersons if emphasis was placed on developing self-directed and motivated apprentices (Pearce, 2019). Beyond the accumulation of vocational skills to achieve "minimum

occupational standards", apprentices could thrive in the future economy if they developed "greater autonomy and responsibility" and an "enhanced capacity for reflection" in their apprenticeship journey. Pearce (2019) found that the best learning environment to achieve self-directed learning is one where both "professional and personal relationships" are present between "self-directed learners, employers and vocational teachers". In such environments, apprentices will benefit from a supportive network where they are given "the opportunity to learn" and "make decisions", which motivates even greater self-directed learning and on-the-job confidence.

Country Study: Australia's Group Training Organisations

Australia introduced competency-based training to meet the demand in vocational training by implementing the National Skills Framework that ensures the quality and consistency of VET training, provision of national qualification across educational institutes, as well as establishment of recognisable standards to assess the skills across sectors. As part of the development in skilled tradespeople, apprentices go through both on-the-job and off-the-job training, during which they can be contracted directly by either the employers or GTOs to be exposed to multiple worksites (OECD, 2010; OECD, 2018; OECD & ILO, 2017). GTOs form an integral pillar in the management of apprentice pathways by mediating the needs of apprentices, employers, and the government. Alluding to the earlier mentioned points on PPPs, the GTOs' ability to comprehensively manage apprenticeship pathways is predicated on strong community and grassroots support. One reason for its popularity is that it "de-risks the employment relationship", since apprentices are contracted to the GTOs and not with employers (Apprentice Employment Network NSW & ACT Office, 2022; OECD & ILO, 2017).

First, through school-based pre-apprenticeship programmes, potential apprentices are exposed to various pathways, career options, and how they could acquire necessary skills in each industry. GTOs serve to connect apprentices with multiple worksites to develop their work experience through on-the-job training (OECD & ILO, 2017). They also play a crucial role in screening and matching apprentices to employers, presenting the advantage of tapping into a larger pool of potential apprentices. For example, GTOs have recently explored creating apprenticeship pathways that are targeted at a more diverse demographic, such as attracting young women into the skilled trades. One strategy is by building their "confidence and self-worth" through career coaching and establishing a support network through strong workplace relationships (Apprentice Employment Network NSW & ACT Office, 2022). GTOs also established procedures to manage attrition by identifying uninterested or mismatched apprentices which significantly helped in mitigating "instability and unnecessary" financial costs for both the apprentices and employers. They also ensured that mismatched apprentices do not immediately contribute to attrition rates but instead, apprentices are presented with redeployment or, if appropriate, requalification opportunities (Apprentice Employment Network NSW & ACT Office, 2022).

Second, GTOs "reduce employer burden" on administrative matters to deliver positive training experiences. Most Australian employers that utilise the services of GTOs are SMEs which significantly benefit from the array of workplace support offered by GTOs. Examples of workplace support include managing the Workplace Health and Safety requirements for apprentices as well as core human resource functions. In some instances, GTOs provide additional training beyond the primary vocational skills provided by employers, i.e. literacy and numeracy lessons (Apprentice Employment Network NSW & ACT Office, 2022).

Finally, having a pool of GTO career mentors that specialise in handling workplace psychosocial issues better positioned them to establish conducive work environments that support the sustained well-being of apprentices. Relating back to Pearce's (2019) research regarding learning environments in apprenticeships, securing positive workplace relationships is imperative in allowing employees to maximise their potential by "feeling safe and confident". In this manner, GTOs serve as a trusted neutral party in resolving workplace disputes and in understanding workplace dissatisfaction.

While GTOs play a part in the early transition of students to become interested in trades and become apprentices, it does not signify the end of their involvement with apprentices' progression to tradespeople. Prior to the completion of training with GTOs, apprentices are mentored by a Trade Development Manager in career goal setting. Apprentices also attend a business course to learn about various aspects in business operations and hear from previous graduates about their personal business experiences, and are entitled to financial support and loans following graduation (OECD & ILO, 2017).

Developing a Qualifications Framework and Lessons from France

The National Qualifications Framework (NQF) classifies and develops a common definition of qualification providing a basis for improving quality, accessibility, and labour market recognition within a country and internationally according to the criteria covering learning outcomes, knowledge, skills, and wider competencies, including occupations (Tuck, 2007). It can enhance the VET system to improve labour market responsiveness; establish pathways between VET, general, and higher education; improve the quality and flexibility of VET; and, lastly, shift from an input-based to an outcome-based VET system (Allais, 2010; Chakroun, 2010). Over time, the qualifications framework for skilled tradespersons across different economies has evolved in definition and purpose and reflects the evolving industry needs of apprenticeships over time.

In this framework, the qualifications attained are independent of the VET institutions and this allows for: (a) validation of prior learning supporting credit accumulation; (b) transfer, as well as ensuring quality assurance when formalising qualifications; and, finally, (c) accrediting institutions, while ensuring quality assurance in the assessments leading to the awarding of qualifications (Chakroun, 2010). Allais (2010) stated that countries successful in implementation of NQFs integrated the framework rather than substituting the existing institutional capabilities. Therefore, in proposing a CPM for skilled tradespeople in Singapore, it is pertinent to examine ways where the new qualifications framework can be used to supplement the existing frameworks for other vocations, not just the skilled trades.

Country Study: France's National Qualifications Framework

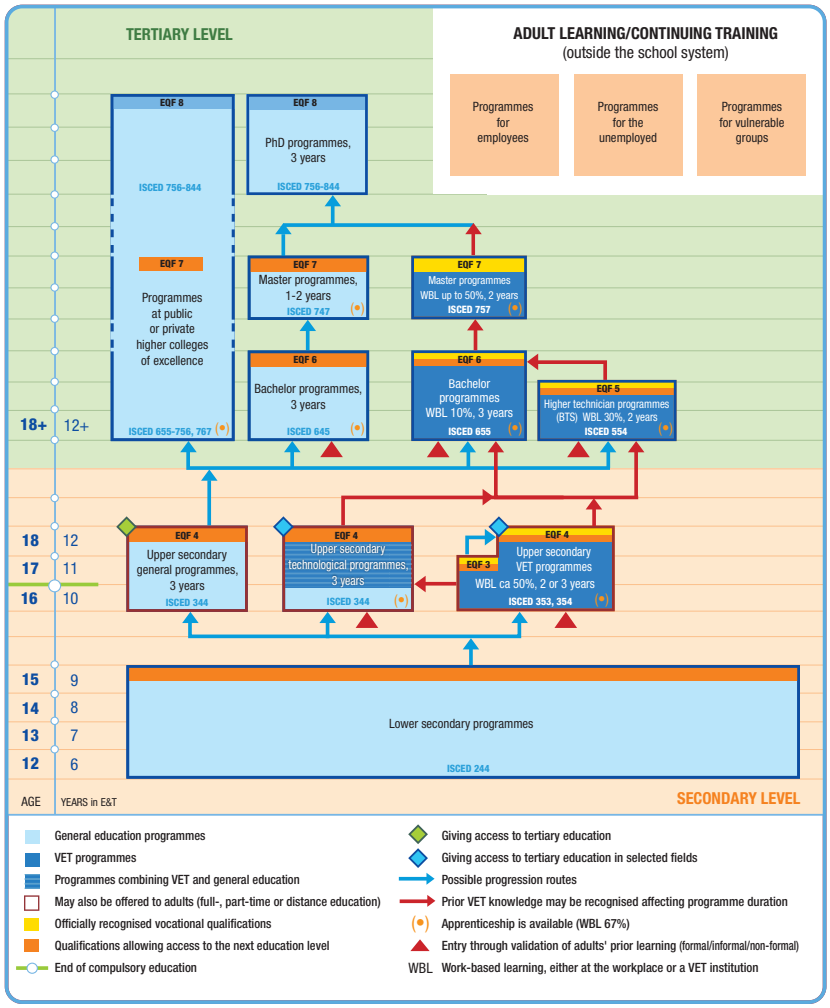
France has compulsory education for youths with distinct levels of education attainment, on completion of lower secondary education. Students in the final year of lower secondary can opt for a career orientation scheme to discover trade work and receive guidance to complete their upper secondary education in VET studies or prepare for vocational qualification in an apprenticeship training scheme. These students have three pathways—"general, technological, and vocational", all of which culminate in a final exam to attain the nationally recognised upper secondary school leaving baccalaureate diploma. The qualifications attained via the three pathways lead to differences in the next possible steps available to these graduates. Graduates from the general education pathway are eligible for higher education academic and technological studies, those in the technological education pathway continue onto tertiary undergraduate or professional bachelor programmes, and lastly, graduates from the vocational pathway are able to acquire their first qualification within 2 years and enter the labour market, or complete a 3-year programme that awards the vocational baccalaureate allowing them to pursue further tertiary studies to attain an undergraduate technician certification. From there, there are integrated studies in technological institutes that allow students to obtain an undergraduate certificate of technology within their second year (European Centre for the Development of Vocational Training [CEDEFOP], 2022; Lamb et al., 2011).

In the French education system, students transitioning to upper secondary education have three pathways, one of which is the VET pathway that offers opportunities to obtain first the qualifications for employment and opportunities for further studies at higher VET levels (Figure 1). The vocational school reform in 2018 enhanced programme delivery to better align with skills necessary for the economy and strengthened career orientation and guidance schemes (CEDEFOP, 2022, p. 33). Students can graduate from higher technician programmes that

provide specialised education and training across various fields to attain the higher technician certificate prior to having a professional bachelor's degree. Professional bachelor's degree programmes delivered in universities will impart vocational skills meant for immediate integration into the labour market, by providing a holistic education combining theoretical and practical subjects, along with an internship and supervised assignments (CEDEFOP, 2022). This system allows students to pace themselves, and the pathway aims to provide students with the necessary skills and knowledge based on the stage they are at, be it to further their studies in the respective fields or to enter the workforce.

Figure 1

Overview of the VET System in France



Note. From *VET REF: Developments in vocational education and training policy database* [unpublished] by CEDEFOP and ReferNet, 2021. Reprinted with permission.

A Career Progression Model for Singapore's Tradesmen

Singapore's Current Training Landscape, Work Landscape, and Policies

In Singapore, the development of CPM for the skilled trades need not start from scratch because the essential building blocks are present. For example, a mature technical and vocational education and training (TVET) pathway is present. This can be attributed to the significant efforts of government and industry to ensure Singapore's TVET system is well adapted to meet the economy's future needs. Fundamentally, Singapore presents a reliable and well-resourced general education pathway that equips potential tradespersons with strong fundamentals in numeracy and literacy skills. In their study of how Singapore's TVET scene has

developed and diversified over the years, Abu Bakar et al. (2020) pointed out that the government had emphasised the importance of vocational education and training pathways and had taken the necessary steps to bridge the gap between nonvocational and vocational education pathways. Like Germany's dual system model, there were significant changes made to Singapore's general education policies, e.g. extending the duration for "less academically inclined" students to complete general education requirements. Consequently, a prolonged duration spent in general education has increased opportunities for students to explore a more diverse array of skills and thus, make more informed career decisions. Beyond changes made to general education pathways, the government has also increased opportunities for interested students to acquire technical and vocational skills at the tertiary level.

Workforce Development: A Whole of Society Approach

Singapore's TVET system equips the local workforce with the appropriate skillsets to meet the demands of the economy (Shafique & Dent, 2019). The pertinent features in Singapore's model include: (a) a coordinated "Whole-of-Government" approach in developing skills policy; (b) adoption of a long-term perspective to future-proof skill reform strategies; and finally, (c) investment not only in individual phases of TVET, but also to ensure that apprentices could navigate through a coordinated TVET system. Singapore's heavy investments in establishing "state-of-the-art" ITEs were also recognised. The report also highlighted that another important thrust towards workforce development at a "Whole-of-Society" level pertained to the SkillsFuture movement where greater focus was placed on "stimulating demand for lifelong learning which nudges citizens towards key industries". Maddock et al. (2019) expressed that the younger generation requires access to and participation in postsecondary education to learn skills and capabilities necessary to enter the workforce, as well as having lifelong learning mentality to constantly develop and improve themselves over time.

An emerging challenge is ensuring Singapore's core of local skilled tradespeople remain competitive in the market by having the relevant skillsets and knowledge to meet current and future demands. Singapore's TVET model offers adequate education and training resources to equip workers with appropriate skills for the ever-changing economy; however, the skilled trades face the continuing challenge of meeting rising wage expectations because wages for other occupations continue to improve. These structural shifts in the labour market imply the need for new strategies to ensure that the TVET option remains a viable option compared with non-TVET options in the tertiary education system. With competition from alternative career options and a shrinking labour force, the focus of these strategies must be multipronged, with selection and recruitment processes targeted at traditional and nontraditional manpower sources. Thus, the skilled trades sector must be open to recruiting apprentices from varied vocational backgrounds.

Pertinent Features Supporting the Proposed Career Progression Model

The proposed model seeks to provide a defined pathway for current tradespersons and new entrants in Singapore, while ensuring a strong Singaporean core within the skilled trades sector in the process. To ensure every chance of success, a well-coordinated effort between the government, institutes of higher learning (IHLs), unions, and industry is essential. Aside from this, there are other considerations.

Changing Mindsets in Students and Expanding the Talent Pool

At a public engagement session organised by NTUC, participants shared that the skilled trades were perceived as physically laborious, dangerous, and an unconventional career choice, especially for Singaporeans holding a tertiary education certificate (Chung et al., 2023). To address these negative stereotypes, participants suggested that having qualifications and certifications may help enhance the image of the profession. Exposing students to various career opportunities in the skilled trades via public education to erase misconceptions to the trades was also mooted.

In Germany's dual system model, students acquire vocational skills and knowledge, while pursuing a general education. Students from as early as upper secondary can opt for the VET pathway with only a small portion of these students pursuing school-based programmes (OECD, 2022). Similarly, in France, after receiving guidance from a career orientation scheme, students are presented the option of choosing between a vocational education, technical education, or general education pathway. Selection of a preferred pathway would determine whether they remain in general education while pursuing their VET studies or proceed to prepare for a vocational qualification in an apprenticeship training centre (CEDEFOP, 2022).

In Singapore, local students are exposed to basic technical skills in their Design and Technology and Home Economics courses. This is a viable starting point, but the primary intent should not focus on promoting specific vocations within the skilled trades, but on how the acquired skills are useful life skills. This strategy is also useful since it would help prevent misinformed or rash career decisions for secondary school students. Separately introducing the skilled trades industry to youths in secondary school via experiential trips and workshops will allow them to build up an interest in the industry and thereafter, interested individuals can be encouraged to enter VET programmes offered in IHLs and ITEs. There is also a need to concurrently assuage and promote the changes and improvements to the skilled trades industry across all generations for changing negative mindsets and removing obstacles and encouraging more youths to join the skilled trades industry.

Diversifying Entry Points for Skilled Trades

A shrinking labour force necessitates being open to nontraditional manpower/talent sources. For example, Full-Time National Servicemen who have acquired valuable skillsets in their National Service (NS) vocations can be one possible source of preapprentices for the skilled trades on completing their NS (CMPB, 2021). There are important considerations when operationalising this "pathway". First, it is necessary for governing/accreditation authorities (e.g. PUB for the plumbing industry) and the skilled trades industries to recognise qualifications attained during NS. Close coordination is thus required between the governing bodies in each skilled trades sector and the Ministry of Defence/Singapore Armed Forces.

Another possible career entry point is to tap on skilled workers with relevant skillsets from emerging sectors like the green economy. It is another source of highly skilled technicians, electricians, and mechanics who could be retrained for the essential skilled trades. The "GreenPlumbers" course, an international upskilling and reskilling course, has supported Australia's plumbing sector's green transition. Plumbers who completed the course were trained in installing energy-efficient technologies in their trade and were awarded with a "GreenPlumbers" license (McCoshan, 2022). A similar initiative locally might be the Singapore Green Building Council's (SGBC) Green Mark Professional Qualification Scheme programme, which has a Continuing Professional Development framework for all Green Mark Accredited Professionals (GMAPs) that aims to uplift, upskill, and recognise green building competencies of professionals in the built environment sector (SGBC, 2015).

The Green Mark Associate is a foundational-level accreditation for new industry entrants or existing nontechnical built environment-related professionals to learn more about built environment sustainability like energy efficiency, green building materials and technologies, indoor environmental quality, and water conservation. Thereafter, Green Mark Associates can move on to become GMAP professionals provided they hold a locally recognised building engineering or building-related degree or diploma (Building and Construction Authority [BCA], 2020). The SGBC Green Mark Professional Qualification Scheme replaced the BCA Green Mark Specialist programme and aimed to uplift, upskill, and recognise green building competencies of professionals in the built environment sector. GMAP professions cut across the entire building and construction value chain allowing for more opportunities to enhance all roles of the built environment sector, such as environmental sustainability consultants, engineers, contractors, energy and carbon specialists, and sustainability professionals (SGBC, 2015). As green buildings and sustainability efforts continue to gain traction, the demand for qualified green professionals will continue to increase (BCA, 2020).

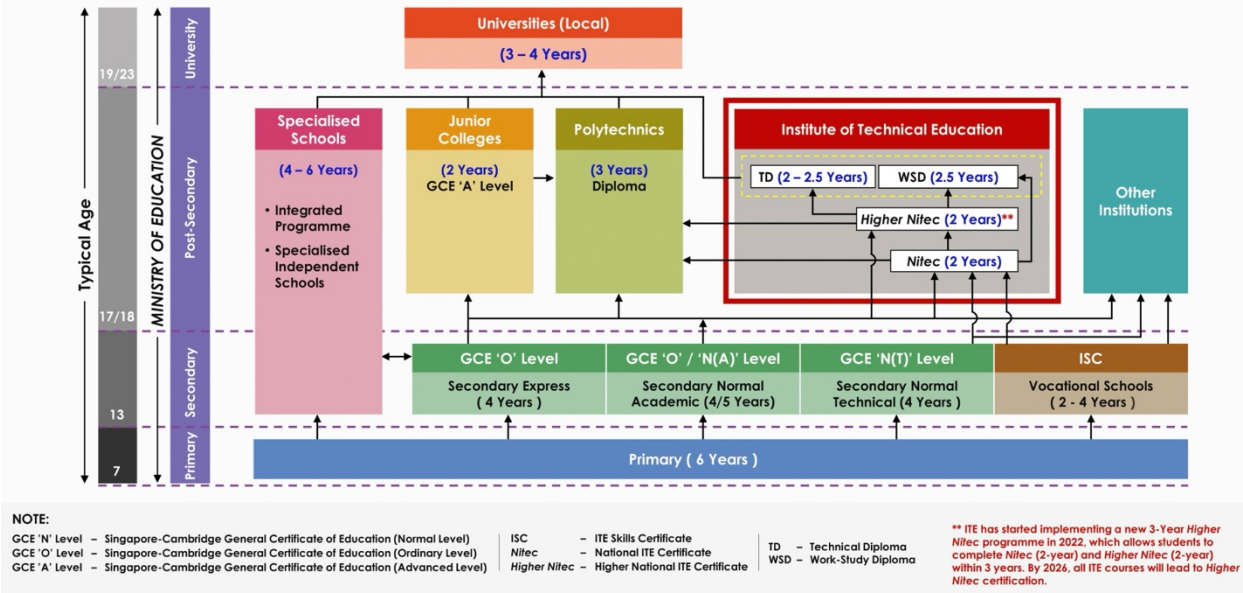
Therefore, the creation of a tripartite-led platform is mooted where interested tradespersons could consider embarking in new fields where their trade skills remain relevant, e.g. in the career opportunities available in the emerging green economy.

Holistic Apprenticeship Pathways Ready for the Future: Balancing Between General and Specific Skillsets

Most TVET courses in Singapore are offered formally by the ITE and are broadly defined and cover an array of general skillsets (ITE, 2021). Certainly, with varying degrees of formal qualifications in related or unrelated sectors, vocational education and training should remain as adaptable as possible to entrants of varying backgrounds. A balance between general and specific skillsets is necessary although an overemphasis on the former at the postsecondary level may not contribute towards building a reliable pool of skilled labour (Khanna, 2022). Figure 2 shows several pathways an individual can follow in pursuit of their education. However, there is currently no specific pathway for tradespeople, i.e. air-con technicians, electricians, and plumbers. With the SkillsFuture movement, although upskilling opportunities are available for tradesmen to pursue in the ITEs, these courses do not provide specialised training specific to skilled trades. Thus, this paper proposes that the institutional training partners (e.g. ITEs and polytechnics) consider seeking a balance between imparting specialised skillsets for the three identified trades while being flexible enough in their syllabus to recognise transferrable skillsets for tradespersons in similar industries.

Figure 2

Current TVET System in Singapore's Education System



Note. From *Singapore: National qualifications framework* by T. T. Y. Thang, H. H. Loh, and S. Razia, 2024. SEA-VET.net: TVET Platform for SEA. Reprinted with permission.

Developing Communities of Practice: Mentorship and Social Support

Pearce (2019) argued that for apprentices to thrive in the future economy, they should demonstrate a capacity for self-directed learning. The future economy requires workers in both technical and nontechnical vocations to remain adaptable (Hancock et al., 2022). This is why our proposed model encourages workers to exercise autonomy in their learning while being supported by a network of mentors and employers. To establish a conducive work environment where apprentices can tap into a reliable network of learning and career counselling advice, we propose a tripartite-led approach towards establishing a defined mentorship system. Considering

that the existing skilled trades comprise either small enterprise owners or self-employed tradespersons, establishing a support network of career mentors for the skilled trades industries is necessary.

The proposed approach is similar to the Australian GTOs model where apprentices tap on a network of career mentors throughout the entire training contract. For most skilled trades industries, the GTOs have field officers who deliver close mentorship and counselling support, especially for new apprentices. In fact, one reason for the relatively high participation and completion rates observed for the Australian apprenticeship model may be due to the comprehensive social support received by new apprentices. In Buchanan and Raffaele's (2016) study of social support structures for the Australian carpentry apprenticeship model, they found that mentorship arrangements which demonstrated extensive formal and informal social support structures produced both productive and committed employees. Recognising the long-term benefits of a good social support framework, several major construction firms in Australia have incorporated social support structures as part of their business model to grow both competent tradesmen as well as future leaders.

Taking reference from the mentorship and social support networks provided by Australian GTOs as well as feedback from local tradespeople, there is a need to develop a pool of industry mentors that are adequately trained to manage the professional and personal development of apprentices. In fact, Singapore's skilled trades industries could leverage the well-coordinated Labour Movement and tripartite partnerships to build communities of practice.

Singapore's Career Progression for the Skilled Trades: The Proposed Model

Career progression in the skilled trades admittedly requires a longer and more specialised qualification and a vocational training pathway. By offering multiple career entry points, potential apprentices will likely possess diverse and varying skill competencies and academic qualifications. The model must be able to accommodate them. Webster and Jarvis (2003) found that "streams of trade work" are differentiated based on the level of academic and vocational skills. Thus, the CPM is not a one-size-fits-all model, but rather a guide to easily access comprehensive, informed, and accurate advice and information about the available options for tradespersons (Maddock et al., 2019).

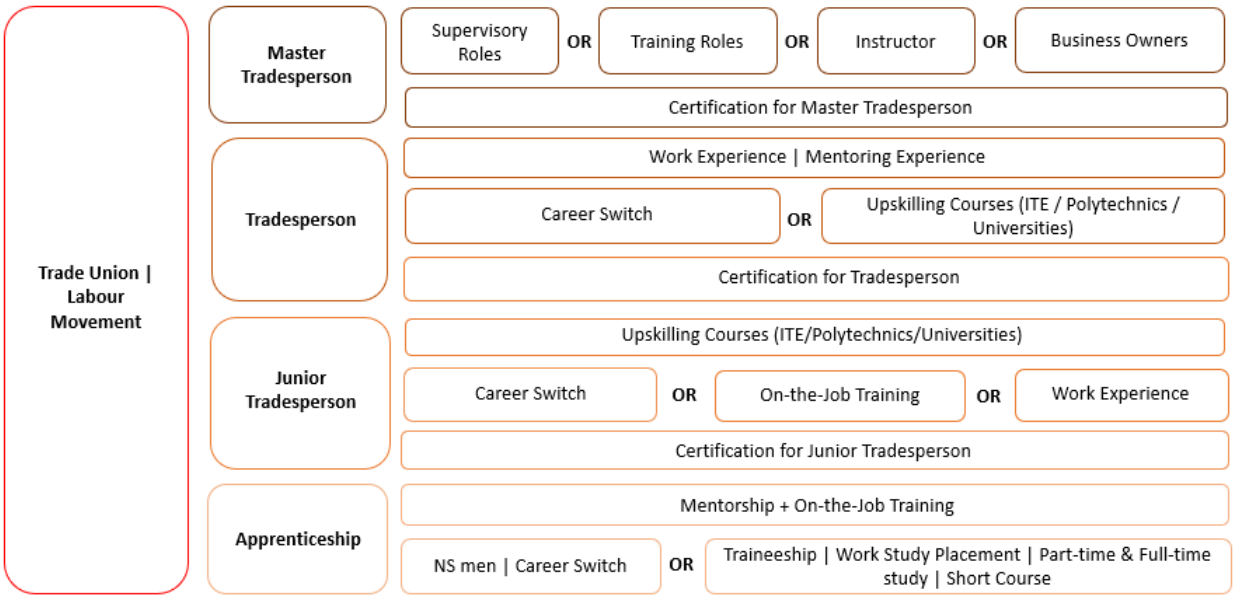
At the apprenticeship level, recruits could come from a variety of sources from formal educational institutions like ITE or polytechnics to alternative career entry points for potential apprentices from nontraditional pathways, e.g. NS or skilled workers with relevant work experiences and qualifications from other industries. As apprentices, they would receive on-the-job training and career mentorship, under the supervision of a master tradesperson, where an apprenticeship would typically last for 2–4 years (Kuczera et al., 2018; OECD, 2018; Pyper, 2008). Apart from compulsory on-the-job training, apprentices would be required to undergo relevant vocational education courses to address skills or knowledge gaps. Depending on arrangements agreed with employers, vocational institutions, and apprentices, courses of varying durations and intensities would be available. Having the flexibility to decide on the course duration and type may help alleviate employers' concerns regarding manpower shortages and constant backlog of contracts. This will also be attractive to those unable to commit to studying full time. On completion of their apprenticeship programme and having attained primary qualifications, they would then be able to assist mentors and concurrently acquire the confidence and skills to perform tasks of increasing complexity.

Subsequently, apprentices after working together and learning from their mentors for a minimum of 2 years would be offered opportunities to upgrade and become junior tradespersons. This transition should also include attending courses and additional certification courses offered at IHLs, ITEs, or SkillsFuture-accredited training providers. Additionally, individuals who are interested in switching careers will be able to become junior tradespersons if they hold a relevant diploma or certification. With at least 3 years of relevant working experience and additional qualifications relevant to their fields (OECD, 2022), apprentices will then be eligible to undergo training before being certified as junior tradespersons.

In this proposed model (Figure 3), vocational qualifications and work experience would be equally important. For a junior tradesperson to become a tradesperson, constant upskilling is expected as well as close shadowing of a more experienced tradesperson. Individuals making a midcareer switch with the relevant degree and certification can also partake in the master-level qualification (OECD, 2022). Individuals at this stage will require a minimum of 5 years of work experience to receive certification as a master tradesperson. At this stage, more career opportunities could be made available to them, e.g. being an educator in teaching and training institutions like ITE.

Figure 3

Proposed CPM



The Labour Movement via the relevant trade unions or NTUC's Employment and Employability Institute should be involved at every step of the CPM. The trade unions or NTUC's Employment and Employability Institute will help identify and match interested candidates or jobseekers with prospective companies to be placed into apprenticeships and kick-start their apprenticeship journey. The trade unions can also assist in attracting Full-Time National Servicemen who are about to complete their full-time NS, whose military vocations allowed them to acquire relevant vocational skills during NS, or those who studied TVET courses in ITEs. From the German experience, trade unions there collaborate with the government to ensure that the education, training, and qualification for tradespeople are standardised and contain useful components based on the current market trend. Therefore, relevant trade unions in Singapore can position themselves to emulate the system in Germany. Companies too can partner with the government to advise on the development of the training curriculum to fit industry's needs (OECD, 2022; OECD & ILO, 2017).

Beyond the accumulation of vocational skills, recognition of relevant work experience and attainment of knowledge pertinent to the skilled trades by employers are key features of the proposed model. Aside from this, the paper proposes that employers also consider other indicators, e.g. involvement with mentoring and recognising the leadership potential of skilled tradesperson in their performance assessment. In adopting this approach, it can help ensure a reliable pipeline of industry mentors. With growing mature workforce, it is prudent to recognise such work experience and leadership skills on an equal footing with other formal qualifications. Thus, highly experienced tradespersons who may lack certain educational qualifications are not disadvantaged but are rather given fair opportunities to progress in their careers. In fact, master tradespersons make good instructors for the next cohort of tradespersons and could extend their careers in vocational training institutions or even in IHLs.

The model seeks to ensure a steady stream of newcomers and provide an available pool of mentors from industry to train and guide apprentices and tradespersons. By raising the skills and qualifications required at each stage of the CPM, the skilled trades may observe sustained wage growth and an attractive career path comparable with other vocations.

Proposed Career Progression Pathway for Plumbers

Here, we present a possible scenario for how CPM can be integrated with the existing pathways for plumbers and perhaps for other skilled trades. Plumbers working in Singapore handle different types of work depending on their license (Public Utilities Board, 2024). In the proposed model, an apprentice plumber (unlicensed) is paired with an experienced Licensed Plumber (LP) to learn the tradecraft. An unlicensed plumber in Singapore can carry out potable and used water works, therefore introducing the apprenticeship structure here is key to ensure proper guidance and quality of work. In fact, this proposed arrangement does not differ much from the current arrangement. In the first two years, apprentices will only be allowed to work under the supervision of LPs. Currently, as a requirement for LP certification, Public Utilities Board (2024) requires applicants to attend a mentorship programme with the Singapore Plumbing Society.

In this proposed model, the current mentoring programme could be instituted earlier at the apprentice level. To be an LP, the junior tradesperson must also hold relevant certificates issued by the BCA, ITEs, or IHLs. Once licensed, they continue to build on their work experience by working with other tradespeople or master tradespeople in their sector. After attaining further experience, perhaps for a minimum of two additional years in the sector, junior tradespeople can then apply to become tradespeople. This thus builds on C. L. Tan et al.'s (2023) suggestion to offer a "multitiered accreditation framework" for tradespeople to visualise and better understand their future pathways, in addition to having the proper knowledge and skills reflective of their respective levels.

C. L. Tan et al. (2023, p. 121) argued that a CPM offering pertinent training opportunities could lead to better outcomes in the areas of career and remuneration for the plumbing community. It could help grow the talent pool and demonstrate career longevity in an otherwise physically demanding trade. In our model, as a tradesperson, they can take up further upskilling courses offered by ITEs or IHLs, and complete larger-scale and complex works alongside other tradespersons. Those who show promise in mentoring apprentices and managing other LPs may seek to become master tradespeople. In our model, tradespersons can evolve across their career life course and even when they are no longer able to deal with the physical demands of the profession, other career alternatives within the trade are open to them. For example, master tradespersons could consider imparting their invaluable knowledge and expertise to subsequent generations of apprentices/junior tradespersons by becoming instructors within the formal training sector.

Conclusion

The skilled trades in Singapore have faced many obstacles and challenges to recruit and maintain a core of local tradespersons because of stagnating wages, negative perceptions, and a shrinking labour pool with few young entrants due to declining births and Singapore's ageing population. Building on earlier work, this exploratory review identified and examined potential lessons from countries with an established skills trade sector and proposed a possible CPM for the skilled trades sector in Singapore. It comprised an apprenticeship pathway promoting career progression through continuous skills upgrading at different points of the journey. The overarching strategy sought to minimise attrition levels, recruit, and incentivise new apprentices to remain committed to the skilled trades. The CPM must continue to offer training and recognition at each stage of the tradesperson's career. It should incorporate a strong mentorship arrangement to manage attrition and develop a core group of future leaders in the trades. The model must also meet the needs of various stakeholders while not placing the employee at a distinct disadvantage. More importantly, there must be strong government, Labour Movement,

and business complimentary partnership to ensure success. These takeaways are not only applicable to Singapore, but also offer countries in similar predicaments a sustainable solution to manage their labour market challenges.

AUTHOR CONTRIBUTIONS

Writing—original draft preparation, Yee, C. & Kang, S.; writing—review and editing, Yee, C & Kang, S.; visualisation, Yee, C.; conceptualisation, Kang, S.; supervision, Kang, S.; project administration, Kang, S. All authors have read and agreed to the published version of the manuscript. Please turn to the CRediT taxonomy (http://img.mdpi.org/data/contributor-role-instruction.pdf) for term explanations.

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REFERENCES

Abu Bakar, M., Kwok, B. Y., & Abu Bakar, A. (2020). Enduring issues within Singapore's TVET. *Asia Pacific Journal of Education*, *40*(4), 472–484. https://doi.org/10.1080/02188791.2020.1838885

Allais, S. (2010). *The implementation and impact of national qualifications frameworks: Report of a study in 16 countries* (ILO Report). International Labour Organisation. http://www.oit.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_126589.pdf

Amornvuthivorn, K. (2016). Public-private partnerships (PPPs) in technical vocational education and training (TVET): Lessons learned from Singapore and U.S.A. and implications for public management in Thailand. *Journal of Public and Private Management*, *23*(1), 91–116. https://www.semanticscholar.org/paper/Public-Private-Partnerships-(PPPs)-in-Technical-and-Amornvuthivorn/2fffa05b44a3df520009a57a0e97314ce37554de

Ang, R. (2023, February 9). New model proposed by NTUC to boost salaries and careers of tradesmen like plumbers, electricians. *The Straits Times*. https://www.straitstimes.com/business/new-model-proposed-by-ntuc-to-boost-salaries-careers-of-tradesmen-like-plumbers-electricians

Apprentice Employment Network NSW & ACT Office. (2022). *The GTO advantage: A value proposition report for group training organisations*. https://1300apprentice.com.au/wp-content/uploads/2022/06/The-GTO-advantage-FULL-May-2022.pdf

Buchanan, J., & Raffaele, C. (2016). *Beyond mentoring: Social support structures for young carpentry apprentices*. National Centre for Vocational Education Research. https://www.ncver.edu.au/__data/assets/word_doc/0032/59477/Support-document.docx

Building and Construction Authority. (2020). *Green professionals*. https://www1.bca.gov.sg/buildsg/sustainability/green-professionals

Canadian Council of Directors of Apprenticeship. (2007). *Glossary of terms for apprenticeship training & certification.*

Chakroun, B. (2010). National qualification frameworks: From policy borrowing to policy learning. *European Journal of Education: Research, Development and Policy*, *45*(2), 199–216. https://doi.org/10.1111/j.1465-3435.2010.01425.x

Chung, C., Kiat, H. C., & Liow, X. L. (2023). *NTUC public engagement session 10 topline summary.* Kantar Public.

CMPB. (2021). *NS vocations*. Ministry of Defence. https://www.cmpb.gov.sg/web/portal/cmpb/home/ns-vocations/#explore-ns-vocations

Dayani, D. (2023, April 24). *How much do polytechnic & ITE graduates earn—And how much less do they get compared to university graduates*. Dollars and Sense. https://dollarsandsense.sg/how-much-polytechnic-ite-graduates-earn-compared-university-graduates/

European Centre for the Development of Vocational Training. (2022). *Vocational education and training in France: Short description*. Publications Office of the European Union. https://www.cedefop.europa.eu/files/4205_en.pdf

European Centre for the Development of Vocational Training & ReferNet. (2021). *VET REF: Developments in vocational education and training policy database* [unpublished].

Eurostat. (2023). *International Standard Classification of Education (ISCED)*. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_Standard_Classification_of_Education_(ISCED)#Implementation_of_ISCED_2011_.28levels_of_education.29

Federal Institute for Vocational Education and Training. (2016). *The German vocational training system*. https://ec.europa.eu/programmes/erasmus-plus/project-result-content/73e084f3-9c3f-464a-b1e3-e7e4da968ac6/bulletin_issue18_august-en.pdf

Federal Ministry for Economic Affairs and Energy. (2022). *The dual system of vocational training in Germany*. https://www.bmwk.de/Redaktion/EN/Downloads/dual-system-of-vocational-training-germany.pdf?__blob=publicationFile&v=2

Hancock, B., Higgins, C., Law, J., Olson, S., Patel, N., & Van Dusen, K. (2022). *Taking a skills-based approach to building the future workforce.* McKinsey & Company. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/taking-a-skills-based-approach-to-building-the-future-workforce

Harris, R., Simons, M., Willis, P., & Carden, P. (2003). Exploring complementarity in on- and off-job training for apprenticeships. *International Journal of Training & Development*, *7*(2), 82–92. https://doi.org/10.1111/1468-2419.00173

Hellwig, S. (2006). Competency-based training: Different perceptions in Australia and Germany. *Australian Journal of Adult Learning*, *46*(1), 51–74. https://files.eric.ed.gov/fulltext/EJ797608.pdf

Hidaya, N. (2023, March 30). *Day in the life of a plumber in Singapore—Do they fix more than just your pipes at home?* The Smart Local. https://thesmartlocal.com/read/plumber-singapore-experience/

Institute of Technical Education. (2021). *Course finder*. https://www.ite.edu.sg/courses/course-finder

Khanna, V. (2022, October 21). Rebalancing rewards between 'head' work and 'heart' and 'hands' work. *The Straits Times*. https://www.straitstimes.com/opinion/rebalancing-rewards-between-head-work-and-heart-and-hands-work

Kuczera, M., Bastianic, T., & Field, S. (2018). *Apprenticeship and vocational education and training in Israel* (OECD Reviews of Vocational Education and Training). http://doi.org/10.1787/9789264302051-en

Lamb, S., Markussen, E., Teese, R., Sandberg, N., & Polesel, J. (Eds.). (2011). *School dropout and completion: International comparative studies in theory and policy*. Springer. https://doi.org/10.1007/978-90-481-9763-7_19

Maddock, S., Klomp, N., Bartlett, H., Bean, M., Kristjanson, L., & Dawkins, P. (2019). *Reforming post-secondary education in Australia: Perspectives from Australia's dual sector universities*. Charles Darwin University, CQUniversity, Federation University, RMIT University, Swinburne University of Technology, and Victoria University. http://hdl.voced.edu.au/10707/502120

Manpower Research and Statistics Department. (2023). *Labour force in Singapore 2022 edition*. Ministry of Manpower. https://stats.mom.gov.sg/Pages/Labour-Force-In-Singapore-2022.aspx

Markowitsch, J., & Wittig, W. (2022). Understanding differences between apprenticeship programmes in Europe: Towards a new conceptual framework for the changing notion of apprenticeship. *Journal of Vocational Education & Training*, *74*(4), 597–618. https://doi.org/10.1080/13636820.2020.1796766

McCoshan, A. (2022). *Greening TVET and skills development: A practical guidance tool*. International Labour Office. http://hdl.voced.edu.au/10707/635376

National Trades Union Congress. (2023). *NTUC moots career progression model to boost skilled essential tradesmen*. https://www.ntuc.org.sg/uportal/news/NTUC-Moots-Career-Progression-Model-to-Boost-Skilled-Essential-Tradesmen/

O'Reilly-Briggs, K. (2011). *The master artisan: A framework for master tradespeople in Australia* (Occasional Paper). National Vocational Education and Training Research and

Evaluation Program, National Centre for Vocational Education Research. http://hdl.voced.edu.au/10707/189921

Organisation for Economic Co-operation and Development. (2010). *Learning for jobs*. OECD Reviews of Vocational Education and Training. https://doi.org/10.1787/9789264087460-en

Organisation for Economic Co-operation and Development. (2014). *Skills beyond school: Synthesis report*. OECD Reviews of Vocational Education and Training. http://doi.org/10.1787/9789264214682-en

Organisation for Economic Co-operation and Development. (2018). *Seven questions about apprenticeships: Answers from international experience*. OECD Reviews of Vocational Education and Training. https://doi.org/10.1787/9789264306486-en

Organisation for Economic Co-operation and Development. (2022). *The landscape of providers of vocational education and training*. OECD Reviews of Vocational Education and Training. https://doi.org/10.1787/a3641ff3-en

Organisation for Economic Co-operation and Development & International Labour Organisation. (2017). *Engaging employers in apprenticeship opportunities: Making it happen locally*. Local Economic and Employment Development (LEED). http://doi.org/10.1787/9789264266681-en

Oviawe, J. (2018). Revamping technical vocational education and training through public-private partnerships for skill development. *Makerere Journal of Higher Education*, *10*(1), 73–91. http://doi.org/10.4314/majohe.v10i1.5

Pearce, D. (2019). A model for developing competent and self-directed tradespeople. *International Journal of Training Research*, *17*(1), 50–64. https://doi.org/10.1080/14480220.2019.1602172

Public Utilities Board. (2024, April 2). *Application for Plumber Licence*. Government of Singapore. https://www.pub.gov.sg/Professionals/Requirements/Licensed-Plumbers/Application-for-Plumber-Licence#

Pyper, W. (2008). Skilled trades employment. *Perspectives on Labour and Income*, *9*(10), 5–14. http://hdl.voced.edu.au/10707/146682

Shafique, A., & Dent, A. (2019). *Adopting global skills innovation for the UK*. RSA Action and Research Centre. https://www.worldskillsuk.org/wp-content/uploads/2020/10/rsa_globalskillsinnovationuk.pdf

Singapore Department of Statistics. (2023). *SingStat table builder*. https://tablebuilder.singstat.gov.sg/

Singapore Department of Statistics. (2024). *Employed residents aged 15 years and over by occupation and age group, (June), annual* [Data set]. Ministry of Manpower. https://data.gov.sg/datasets/d_1d7ab908d16d7b9ddf6f2c2985894119/view

Singapore Green Building Council. (2015). *Green procurement of green buildings: Green mark accredited professional*. https://www.sgbc.sg/sgbc-certifications/green-mark-professionals

Tan, C. L., Seah, S., Wong, R., & Liow, D. (2023). Taking the plunge: Professionalising the plumbing sector. *Singapore Labour Journal*, *2*(1), 117–124. https://doi.org/10.1142/S2811031523000219

Tan, I. H. (2023, May 1). *Deputy Prime Minister Lawrence Wong reinforces the Government's commitment to workers at the May Day Rally 2023.* National Trades Union Congress. https://www.ntuc.org.sg/uportal/news/Deputy-Prime-Minister-Lawrence-Wong-reinforces-the-Governments-commitment-to-workers/?isSerp=true

Thang, T. T. Y., Loh, H. H., & Razia, S. (2024). *National qualifications framework*. SEA-VET.net: TVET Platform for SEA. https://sea-vet.net/Singapore

Tuck, R. (2007). *An introductory guide to national qualifications frameworks: Conceptual and practical issues for policy makers*. International Labour Organisation. https://www.cinterfor.org/sites/default/files/file_publicacion/NQFGuideILO.pdf

Tucker, M. S. (2012). *The phoenix: Vocational education and training in Singapore*. National Center on Education and the Economy. https://eric.ed.gov/?id=ED556321

Vertakova, J., & Plotnikov, V. (2014). Public-private partnerships and the specifics of their implementation in vocational education. *Procedia Economics and Finance*, *16*, 24–33. https://doi.org/10.1016/S2212-5671(14)00770-9

Webster, E., & Jarvis, K. (2003). The occupational career paths of Australian tradesmen. *Labour and Industry*, *14*(2), 61–81. https://doi.org/10.1080/10301763.2003.10669288

Yeo, N. (2023, February 9). *NTUC plans to develop the career progression model for skilled trades workers*. NTUC. https://www.ntuc.org.sg/uportal/news/NTUC-Plans-to-Develop-the-Career-Progression-Model-for-Skilled-Trades-Workers/

Zalizan, T. (2022, October 18). DPM Wong flags concern over growing pay gap based on education levels; calls for greater recognition of ‘hands-on’, ‘heart’ work. *Today Online*. https://www.todayonline.com/singapore/hand-heart-head-work-wong-2022451

PRACTITIONERS' INSIGHTS

Career Health: The Accelerator Towards Human Capital Optimisation

Minyi Chua

Abstract

This practitioners' insights paper explains the concept of Career Health which is aimed at empowering Singaporeans to build career resilience and mobility and enabling companies to boost talent attraction, retention, and workforce development. Singapore's open economy and exposure to global macrotrends make individuals susceptible to job disruptions and companies to labour and skills shortages. We can buffer against these effects through building Career Health, which optimises the potential of our human capital. Through career planning, individuals are equipped with better career management skills to navigate career transitions, and gain clarity on how to upskill and reskill themselves to meet career aspirations. Through adopting skills-first practices, firms can benefit from a wider skilled talent pool, and increase the retention of skilled talent through career development and up/reskilling employees. Individuals and businesses can tap into a suite of initiatives by Workforce Singapore which supports Career Health, such as the CareersFinder tool on MyCareersFuture portal, personalised career guidance programmes for individuals, and structured career planning workshops for employers to support their employees. Implemented effectively, Career Health will enable developed economies to optimise human capital in an ageing population, and to thrive in a volatile future.

The Need for Career Health

Introduced in 2024 by the Ministry of Manpower, Workforce Singapore (WSG), and SkillsFuture Singapore, Career Health is a new concept under the national SkillsFuture movement, that enables Singaporeans to assess, chart, and execute their career pathways. Companies can also support the Career Health of their workforce by investing in skills-first practices[1] and career development for employees. Career Health will be a critical strategy for optimising human capital for Singapore. Given Singapore's open economy and exposure to global macrotrends such as the green transition and the rise of artificial intelligence, individuals are at increasing risk of skills obsolescence and employment disruption in a fast-paced, rapidly evolving labour market. Employers face a greater risk of labour and skills shortages and decreased productivity, due to a range of factors such as evolving industry needs, a rapidly ageing workforce, and declining birth rates. The Career Health initiative is meant to better harness the potential of human capital, and enable businesses and individuals to better buffer against job disruptions and labour and skills shortages while also potentially bolstering labour productivity and supporting Singapore's overall productivity-driven growth.

As opposed to battling unemployment when it hits, Career Health aims to proactively build career resilience and mobility upstream before employment disruptions start. Senior Minister of State for Manpower Dr Koh Poh Koon emphasised at the Committee of Supply 2025 that taking ownership of one's Career Health is much like taking care of one's physical health, where a preventive and proactive approach is always preferred. Individuals are encouraged to regularly assess career prospects and skills, constantly chart and review career plans, and execute these plans to seek better employment outcomes (Koh, 2025). It is also in the interest of employers to prioritise the Career Health of their workers, as "employers who do so can better attract and retain talent, sharpen their competitive age, and grow their businesses" (Koh, 2025). This can be done by adopting skills-first hiring practices, upskilling and reskilling employees in tandem with job redesign, and investing in the career development of employees. The suite of government interventions offered, of which WSG's are but a selection, serve to meet the diverse needs of individuals' career journeys and companies' business trajectories, as no single approach alone can address the complex landscape of Career Health.

With improved Career Health, individuals are poised to enjoy better employment outcomes and long-term career progression, and enterprises gain access to a highly skilled and agile talent pool for greater productivity-driven growth, ultimately contributing to a dynamic and future-ready workforce.

What Individuals Can Do to Improve Their Career Health

Cultivate Good Career Management Skills Which Lead to Positive Outcomes on Job Satisfaction, Job Performance, and Access to Career Opportunities

Individuals can improve their Career Health by cultivating good career management skills. This refers to the intentional and active process of reflecting and gaining deeper self-awareness, identifying career goals and strategies, and implementing them with regular reviews and monitoring (Neale, 2021). As part of career management and planning, individuals should also keep up to date with where the jobs and industries with high growth potential are, and engage in consistent upskilling and reskilling to remain adaptable in an evolving job market and open oneself up to new and better career pathways (Workforce Singapore, n.d.).

To strengthen career management skills, individuals can undergo career guidance to receive structured support in career planning, making the right training and occupational choices, and managing their careers (Cedefop et al., 2021). There are several benefits that career guidance provides. For example, career guidance facilitates constructive career exploration that is grounded in self-knowledge and clarity of personal preferences, allowing individuals to

[1] Skills-first practices refer to talent management practices which first consider a person's skills and competencies rather than traditional qualifications (World Economic Forum & PwC, 2023).

deliberately and systematically consider options that are aligned with their values, interests, passions, and skills. When individuals are in jobs that are aligned with their interests and abilities, and in organisations that are aligned with their personal values, they are more likely to experience positive outcomes like job satisfaction and better job performance, therefore promoting greater career success (Chang et al., 2023; Kristof-Brown et al., 2005). Individuals who engage in career guidance programmes also gain greater self-efficacy in directing their careers, and are more aware of emerging labour market opportunities and how their skills transfer into a wider range of career possibilities (Layton et al., 2022), allowing them to access good growth job roles and industries.

Explore Recommendations on Workforce Singapore's CareersFinder Tool and Build Career Management Skills Through Career Guidance Programmes

In Singapore, a suite of support for Career Health is progressively being implemented by government agencies. WSG, a statutory board under the Ministry of Manpower that aims to promote a competitive, inclusive, resilient, and employable workforce, drives several initiatives that support Career Health. WSG's mission is to enable Singaporeans to access good job opportunities and build their careers at every stage of life, while enabling employers to create good jobs for Singaporeans and develop an agile workforce. For instance, individuals who would like to improve their Career Health can utilise WSG's CareersFinder feature on the MyCareersFuture (MCF) portal to receive more personalised recommendations on jobs and skills.[2] CareersFinder harnesses government data and artificial intelligence to help individuals better plan their careers by providing them with customised recommendations on adjacent occupations and training opportunities based on their skills. WSG's CareersFinder tool has addressed the career and upskilling needs of more than 55,000 individuals as of December 2024, according to MCF data.

Employed individuals who are looking to develop better career management skills can also take up the Polaris suite of Career Guidance programmes, which offers personalised career guidance delivered by certified career coaches from WSG and its career matching provider partners (AngusKnight Singapore Pte Ltd and Ingeus Pte Ltd). Through Polaris, dedicated career coaches help participants make informed career decisions and guide them in shaping a tailored career development plan that is aligned with their strengths, values, and aspirations, to fuel their professional growth. Nine in 10 respondents who participated in the first run of Polaris from November 2023 to May 2024 expressed positive views of it, particularly that they gained better clarity and confidence in career planning after receiving career guidance. One of them was Adeline, who previously held the position of Marketing Director at a global home appliances company and sought guidance from Polaris after spending 18 years in the consumer electronics industry. She clarified her career aspirations in the career guidance process, which was to pivot to a new industry while maintaining her passion for marketing and branding. With guidance from her career coach, Adeline developed a plan for upskilling and embraced opportunities to explore new career paths, leading her to secure a position as the Head of Marketing at a food solutions company, with a salary increase. Her story is one of many. As individuals actively participate in career planning and seek out career guidance, they are equipped to make better decisions that further their skills development and career growth, and enable them to access new opportunities.

How Companies Can Support Their Employees in Career Health

Invest in Human Capital Development by Upskilling and Reskilling Employees

Employers can improve the Career Health of their employees by adopting skills-first practices, such as providing upskilling and reskilling opportunities to the employees, as well as implementing a skills-first hiring approach. These, in turn, improve business outcomes as skilled

[2] Link to WSG's CareersFinder feature on the MyCareersFuture portal is: https://careersfinder.mycareersfuture.gov.sg

talents are more likely to remain with progressive employers who develop Career Health, and better retention enhances business productivity and success.

Employees respond and adapt to changing skills requirements at the workplace through upskilling and reskilling. Employer-led upskilling and reskilling will ensure evolving business needs of companies are well met. Employers can tap into a suite of programmes offered by WSG which support them in redesigning jobs into growth job roles and reskilling employees to perform these roles. The Support for Job Redesign under Productivity Solutions Grant, for instance, offers funding to employers to work with preapproved job redesign consultants in redesigning work processes, tasks, and responsibilities, to complement and drive business and workforce transformation. Apart from making work processes more productive, job redesign allows employers to better hire and retain good workers as redesigned jobs become more attractive. On top of that, employers can benefit from WSG's Career Conversion Programmes (CCPs), offered in around 30 sectors, which help employers broaden their talent pool by reskilling midcareer new hires or existing employees into growth job roles with good longer-term prospects, with salary support of up to 90%. There are different modalities of CCPs. For example, while Place-and-Train CCPs support the hiring and reskilling of midcareer new hires into growth job roles, Job Redesign and Reskilling CCPs (JRR CCPs) support employers in reskilling existing employees within the firm to take on growth job roles aligned to Industry Transformation Maps/Jobs Transformation Maps.

The benefits of reskilling accrue to both employers and employees. Take the example of Richard Lee, a 30-year Operations Manager in Union Air Freight (Singapore), who was reskilled to utilise integrated digital systems and master new skills like data analysis and strategic planning, as part of WSG's JRR CCP. The new role enabled him to manage transport requests digitally, optimise routes in real time, and make data-driven decisions in resource planning. Consequently, as Richard's role evolved from focusing solely on operations, to one that combines operational expertise with strategic thinking and data-driven insights, Richard was able to expand his impact and deliver greater value to his company. Richard's story demonstrates the value that reskilling, in tandem with job redesign, brings to companies and individuals who choose to invest in Career Health actively.

Adopt Skills-First Hiring Practices Which Can Improve Talent Acquisition and Retention

Apart from upskilling and reskilling, skills-first hiring is another key strategy for Career Health that benefits employers. Skills-first hiring has the potential to widen access to a larger skilled talent pool, enabling business success. Tangible business benefits were reported by 88% of surveyed organisations who had adopted skills-first hiring, including the improved quality of work and performance, expanded talent pool, reduced time to hire, and improved new-hire retention rate (SkillsFuture Singapore, 2024). It is no wonder that 79% of companies in the Asia-Pacific are focusing on skills and competencies when hiring, as opposed to educational qualifications and years of experience (LinkedIn, 2021). This includes incorporating skills-first assessments, featuring skills and competencies in job descriptions, and indicating which skills are required versus which can be learnt on the job (World Economic Forum & PwC, 2023).

Skills-first hiring can address talent shortages by growing the pool of potential employees by nearly 10 times and retaining those employees, as employees tend to be in roles where they can grow, excel, and experience job satisfaction (LinkedIn, 2023). It empowers new and existing employees to take ownership of their careers, as they can focus on the skills they possess and the skills they need to acquire to meet their individual career goals, and transition into areas of business need within the organisation. WSG's MCF job matching platform, which utilises a skills-first job matching algorithm, is one avenue which supports employers in Career Health, as it encourages employers to indicate the skills required in the job descriptions and recommends to them prospective job applicants with relevant adjacent skills (see Figure 1). Jobseekers are also recommended jobs based on their skills and work experiences, with the percentage of skills match indicated, enabling them to be more aware of their skills and skill gaps (see Figure 2).

Figure 1

Examples of Features for Employers on MyCareersFuture Portal (Screenshots Taken on 2025, April 7)

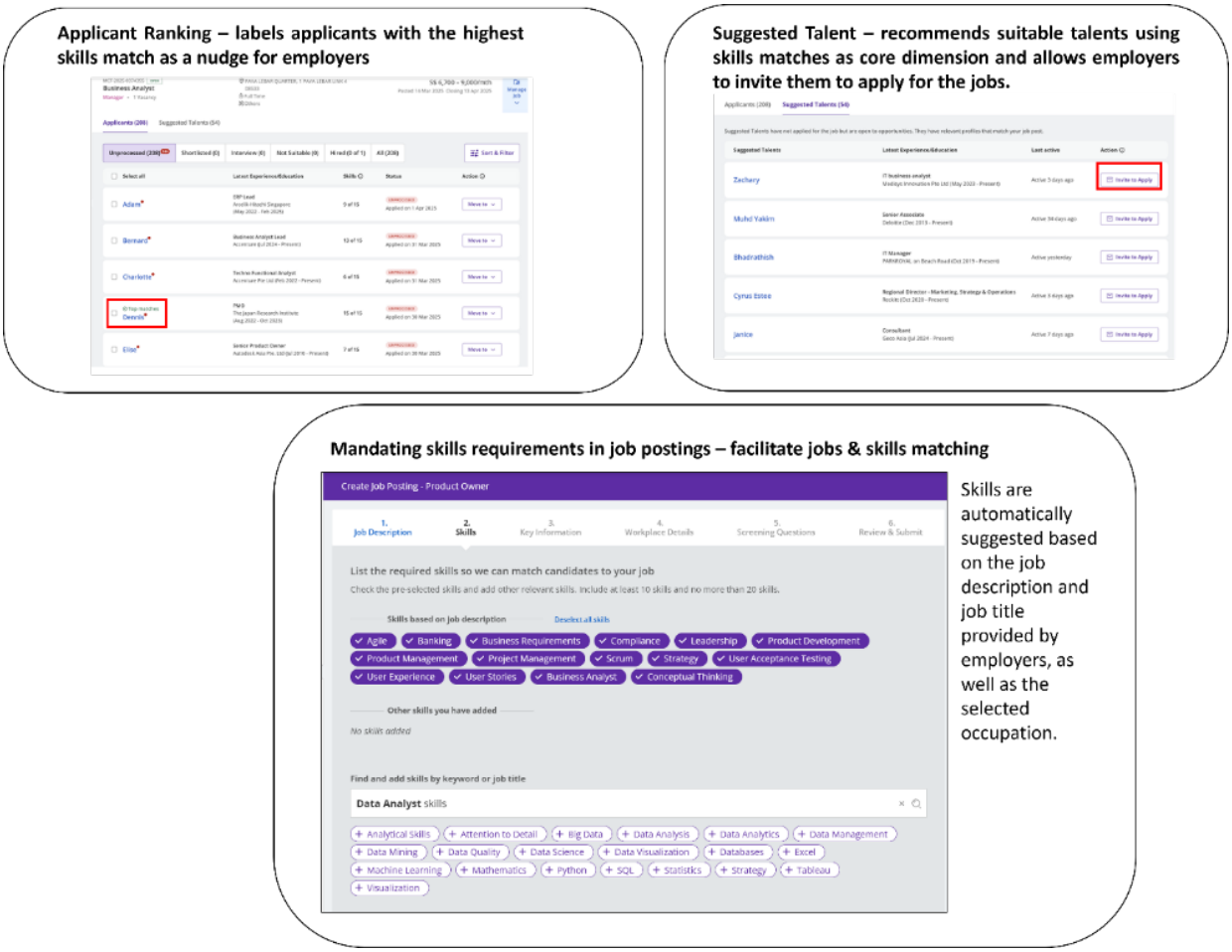

Figure 2

Example of Skills Matching Feature for Jobseekers on MyCareersFuture Portal (Screenshots Taken on 2025, April 7)

Support the Career Development of Employees Which Can Enhance Career Motivation and Sustain the Benefits of Upskilling and Reskilling, Skills-First Hiring, and Job Transformation

To effectively sustain the benefits of skills-first practices, employers should actively support the career development and professional growth of employees in concert with enterprise growth and job redesign efforts.

In the face of global macrotrends like the green transition and the rise of artificial intelligence, job redesign has become crucial for employers as it ensures that that work tasks and responsibilities are continuously analysed, restructured, and optimised to meet the evolving skills needs of the organisation. Job redesign also creates new career pathways, which require updated skills and competencies.

Employers can address these skills gaps for redesigned jobs, by facilitating employees' exploration of available growth job roles aligned with their values and interests. To facilitate these transitions, employers can hold more structured career planning conversations with employees to explain the skills development and training required for these roles, and how these roles will be more relevant for business outcomes and future employability.

Employers in Singapore can send their line managers and Human Resources (HR) staff to structured career planning workshops offered by WSG and its partners. Through these workshops, employers learn to identify skills gaps and conduct career conversations with employees. Such investments in employees' career development has the potential to improve employee loyalty. Employees may also feel more motivated to perform at work and support enterprise changes and growth, as they perceive employers to be dedicated to their personal growth (Ferdiana et al., 2023). When career development is carried out in tandem with skills-first practices and job redesign, the benefits of talent acquisition and retention, improved productivity, and greater career resilience and progression are better sustained, making Career Health a winning strategy for both employers and employees.

Different Strategies Adopted by International Public Employment Services in Promoting Career Guidance and Skills-First Practices

The Singapore government is not alone in focusing on upstream strategies to build the ability of the workforce to navigate disruptions. Globally, public employment services are also moving in similar directions by promoting career guidance and skills-first practices in the workforce.

On the career guidance front, the Flemish Public Employment Service (also known as VDAB), has an innovative career voucher system which created a sustained market for career guidance services. Citizens pay a small personal contribution to attend career guidance sessions at one of the many career centres, where they will jointly develop a compulsory personal development plan (Cedefop, 2020).

In the area of skills-first practices, the United Kingdom government, through the new Growth and Skills Levy which has taken effect since April 2025, is expected to strengthen the adoption of skills-first practices in the labour market by providing funding support to employers for a wider range of training programmes aligned with local skills needs, including shorter courses and upskilling initiatives instead of only traditional apprenticeships, and reducing the red tape for smaller businesses to assess funding (Cheesman, 2025). Employers are encouraged by the government to focus on practical skills rather than qualifications in their search for talent (Fuller et al., 2022), as exemplified by Accenture, a United Kingdom-based tech company, which hired 50,000 new employees during the pandemic despite them not meeting traditional degree requirements (Nawrat, 2023). Through Accenture's apprenticeship programmes and Skills to Succeed Academy, individuals are equipped with the tools and knowledge they need to build a career in the organisation (Nawrat, 2023). These examples highlight a few practices that recognise the impact of career guidance and the adoption of skills-first practices, for individuals, employers, and on a national level.

Conclusion

Career Health encourages individuals to chart and take concrete actions to fulfil their career plans and aspirations, and employers to adopt skills-first practices and support the career development of employees. If done well, Career Health can enable Singapore to better realise the potential of Singapore's most precious resource—her people. Individuals of all ages and backgrounds are better prepared to navigate career transitions and are equipped with the skills to meet evolving market demands. At the same time, employers who hire on the basis of capabilities and are dedicated to the career development of employees will likely find their manpower needs met and enterprise growth sustained, as they will likely be able to attract and retain more talent even in the face of labour and skills shortage risks. As such, it is time for individuals to invest in their Career Health, and for employers to support and invest in the Career Health of their employees. Singapore has embarked on Career Health, and in time, if implemented effectively, Singapore's Career Health initiative could serve as a blueprint for how ageing societies and developed economies can adapt workforce strategies and withstand global headwinds, to thrive in an uncertain future.

BIOGRAPHY

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Ms Chua Minyi was the Director for Strategic Planning at Workforce Singapore, overseeing strategic priorities, corporate planning, enterprise risk management, as well as its research agenda. She has served in the Singapore Public Service across a range of policy and regulatory functions and portfolios, including the Ministry of Law, the Ministry of Education, and the Singapore Land Authority. Minyi holds an MPhil in Public Policy (2020) from the University of Cambridge, a Masters by research in Social Sciences (2011), and a First Class Honours Degree in Sociology (2006) from the National University of Singapore.

REFERENCES

Cedefop. (2020). *Inventory of lifelong guidance systems and practices - Belgium (FL)*. CareersNet national records. https://www.cedefop.europa.eu/en/country-reports/inventory-lifelong-guidance-systems-and-practices-belgium-fl#access-to-guidance

Cedefop, European Commission, European Training Foundation, International Labour Organisation, Organisation for Economic Co-operation and Development, & United Nations Educational, Scientific and Cultural Organisation. (2021). *Investing in career guidance: Revised edition 2021* (Publication No. 2230). International Agency Working Group on Career Guidance (IAG WGCG). https://www.cedefop.europa.eu/en/publications/2230

Chang, P., Guo, Y., Cai, Q., & Guo, H. (2023). Proactive career orientation and subjective career success: A perspective of career construction theory. *Behavioral Sciences*, *13*(6), Article 503. https://doi.org/10.3390/bs13060503

Cheesman, S. (2025, January 20). *How the Apprenticeship Levy is changing in 2025*. The Sage Group plc. https://www.sage.com/en-gb/blog/apprenticeship-levy-changing/

Ferdiana, S., Khan, Z., & Ray, S. (2023). Investigating the impact of career development, organizational commitment, and organizational support on employee retention. *Journal of Management Studies and Development*, *2*(02), 117–128. https://doi.org/10.56741/jmsd.v2i02.108

Fuller, J. B., Langer, C., Nitschke, J., O'Kane, L., Sigelman, M., & Taska, B. (2022). *The emerging degree reset: How the shift to skills-based hiring holds the keys to growing the U.S. workforce at a time of talent shortage* [white paper]. Burning Glass Institute. https://www.hbs.edu/faculty/Pages/item.aspx?num=62030

Koh, P. K. (2025, March 7). *Speech by Senior Minister of State for Manpower, Dr Koh Poh Koon at Committee of Supply 2025*. Ministry of Manpower, Government of Singapore. https://www.mom.gov.sg/newsroom/speeches/2025/0307-sms-koh-speech-for-cos-2025

Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, *58*(2), 281–342. https://doi.org/10.1111/j.1744-6570.2005.00672.x

Layton, R. L., Solberg, V. S. H., Jahangir, A. E., Hall, J. D., Ponder, C. A., Micoli, K. J., & Vanderford, N. L. (2022). Career planning courses increase career readiness of graduate and postdoctoral trainees. *F1000Research*, *9*, Article 1230. https://doi.org/10.12688/f1000research.26025.2

LinkedIn. (2021). *The future of talent 2021* [report]. https://business.linkedin.com/content/dam/me/business/en-us/talent-solutions/resources/pdfs/future-of-talent-whitepaper.pdf

LinkedIn. (2023). *Skills-first: Reimagining the labor market and breaking down barriers*. LinkedIn Economic Graph Report. https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/PDF/skills-first-report-2023.pdf

Nawrat, A. (2023, July 19). *Why Accenture hires for skills over qualifications*. UNLEASH. https://www.unleash.ai/learning-and-development/why-accenture-hires-for-skills-over-qualifications/

Neale, P. N. (2021, August 13). Career Management: For you and your leadership. *Forbes*. https://www.forbes.com/councils/forbescoachescouncil/2021/08/13/career-management-for-you-and-your-leadership/

SkillsFuture Singapore. (2024, April). *Building a skills-first workplace*. MySkillsFuture, Government of Singapore. https://www.myskillsfuture.gov.sg/content/portal/en/career-resources/career-resources/job-skills-insights/Building-a-Skills-First-Workplace.html

Workforce Singapore. (n.d.). *Rise to better career health with career planning*. Government of Singapore. https://www.wsg.gov.sg/home/campaigns/career-health

World Economic Forum & PwC. (2023). *Putting skills first: A framework for action* (WEF White Paper). https://www.weforum.org/publications/putting-skills-first-a-framework-for-action

Diversity Climate: Factors for Successful Implementation

Jia En Kenneth Woong and Emily Michelle David

Abstract

We are experiencing a gradual shift when it comes to how organisations can attract and support diverse talents at work. In recent decades, researchers have documented the benefits and challenges of employing a diversified workforce comprising different ages, genders, racio-ethnicities, cultures, and neurological differences. Yet, there is limited research dictating how firms can promote a truly inclusive workplace for their employees. Instead, practitioners often mistakenly assume that simply hiring greater numbers of employees that have visible differences is sufficient. To remedy this, we propose three practical recommendations to help managers create and sustain supportive diversity and inclusion climates in modern workplaces that allow them to leverage the benefits and minimise the drawbacks of a diverse workforce. These include demonstrating top management's commitment to diversity, aligning diversity initiatives with strategic goals, and ensuring that cultural symbols and artefacts reinforce the value of diverse perspectives.

Introduction

The *TOGETHER POSSIBLE* report of the United Nations Sustainable Development Group was made to promote the inclusiveness of individuals in economic development and encourages managers to enhance workforce diversity in their organisations (United Nations Sustainable Development Group, 2017). Simultaneously, researchers have also investigated the effects of hiring individuals of diverse demographic backgrounds, socioeconomic statuses, and cognitive styles (e.g. Cokley, 2024; Rua-Gomez et al., 2024; Wargo & Hurwitz, 2024). One enabling factor that has emerged from this research is a robust climate of diversity and inclusion, which enhances an organisation's ability to leverage diverse resources. But, so far, surprisingly little research has detailed exactly how managers can effectively create these organisational climates. Practical recommendations are perhaps even more critical today considering the clear impact that stakeholders' perceptions about the effectiveness and authenticity of an organisation's diversity management initiatives can have on the overall success of these programmes and policies (Roberson et al., 2024).

We reviewed the diversity and inclusion, psychological safety, and organisational justice literatures to better understand the building blocks of a positive diversity climate. We concluded that the key components are a strong top management commitment to diversity, employees' perceptions that the organisation truly values employees as unique contributors to its success, and the addition of cultural artefacts to encode the firm's commitment to inclusivity (Kottke & Agars, 2005).

What is a Strong Diversity and Inclusion Climate?

It is important for managers to first understand what constitutes an effective culture of diversity and inclusion in the workplace for all employees. An effective diversity climate is characterised by individuals accepting the differences, forming positive perceptions of leaders' commitment to diversity, and agreeing that the organisation is fair and respectful of everyone (Garcia & Hoelscher, 2008; Hofhuis et al., 2012). The establishment of a supportive diversity climate is important because it mitigates unintended consequences of diversity programmes and reduces discriminatory behaviours at work (Kunze et al., 2013; McKay et al., 2008). In addition, it results in positive employee outcomes such as increased organisational commitment, more citizenship behaviours, and reduced withdrawal intentions (Gonzalez & Denisi, 2009; Kaplan et al., 2011; McKay et al., 2007). At the macro level, firms with a strong positive climate also enjoy higher levels of customer satisfaction (McKay et al., 2011) and improved firm performance through increased revenue (McKay et al., 2009).

The State of Diversity Programmes Today

Diversity programmes have largely focused on increasing the representation of minority groups at work, the provision of diversity training, and the implementation of social outreach initiatives (Andrulis & Sachdev, 2009). Specific initiatives include targeted hiring and mentoring opportunities (Davidson, 2011) and the availability of whistleblowing avenues and harsh penalties for perpetrators (e.g. Johnson & Johnson, 2023; SBS Transit, 2022).

Going beyond these, scholars have noted that creating a positive diversity climate has huge upsides for both individuals and the organisation. According to a McKinsey study in 2023, firms with an increased support for diversified groups (e.g. more women in leadership) outperformed their industry peers by 39% (Dixon-Fyle et al., 2023). This echoes the findings of HRDive in 2021 where companies who prioritised diversity were 12 times more likely to retain their talents and 8.5 times more likely to retain their customers (Estrada, 2021).

Unfortunately, most diversity programmes today fail to propel the organisation to achieve the intended benefits of their managers (Herdmann & McMillan-Capehart, 2010). For instance, diversity policies conceptualised in the West may be less effective in different cultures and contexts. As an example, the legal protections for women at work differ across countries, which may have implications for female employees on expatriate assignments (Kelly, 2021). In addition,

some programmes fail because they are viewed as standalone efforts, and do not feature support and resources for the newly hired diverse workers (Dobbin et al., 2011; Taniguchi, 2006). In addition, there has been considerable pushback against diversity initiatives in both the business community and some sectors of academia, with their opponents arguing that such programmes undermine organisational unity (Waldman & Sparr, 2023). Thus, the framing of the rationale for the initiatives and the perceived importance of workforce diversity are critical to garner the needed support for success (Lambouths et al., 2019).

When employees lack clarity about the motivation for diversity imperatives, the mere implementation of diversity programmes, such as setting quotas for personnel recruitment, may actually produce unintended consequences (Ip et al., 2020; Leslie, 2019). For instance, claims of reverse discrimination and reduced employee motivation may occur because these programmes can reinforce the visible differences and associated negative stereotypes (Mannix & Neale, 2005). In the long term, these negative employee experiences can deteriorate the employer brand and reduce the effectiveness of talent attraction efforts (Puritty et al., 2017).

Given the potential adverse effects of diversity programmes, it is important to understand when these programmes are truly beneficial for an organisation. Although Fortune 500 companies spend U.S. $7–25 billion annually on diversity programmes (PurposeBrand, 2023), there is a dearth of research investigating whether and when these programmes are effective (Naff & Kellough, 2003). Without a better understanding of the components of effective programmes, it is possible that organisations may be wasting valuable resources on programmes that do not produce the intended return on investment. Mere policy changes and training alone are insufficient to drive changes in employees' perceptions of an inclusive workplace (Colgan et al., 2007).

How Can We Create a Strong Diversity and Inclusion Climate?

Despite evidence clearly demonstrating the positive outcomes of a strong diversity climate at work, there is little established guidance for managers on how to create such climates in organisations. We have also found that most diversity programmes today focus on addressing the surface-level diversity of the workforce, without addressing the deep-level dissimilarities among individuals in an organisation. This is an important oversight as employees who share strong ties with their coworkers are more likely to develop a deeper sense of belonging and become more accepting of individual differences (Robertson et al., 2020). We suggest that leaders' behaviours and physical environmental cues are critical to create supportive and inclusive climates for diverse employees at work. Specifically, we recommend the following actions to create an effective diversity and inclusion climate at work.

Secure Employee Buy-In for Diversity Imperatives

First, leaders should share the anticipated benefits of diversity initiatives with employees and identify possible indicators of these to secure employees' buy-in for the anticipated change (Barrett, 2002; Hubbart, 2023; Mathews & Crocker, 2016; Moon, 2009; Percy, 2023; Thomson et al., 1999). Managers should also communicate their genuine support and ownership of the diversity imperative to drive the intended change (Meyer et al., 2007). This will help individuals to better understand what is expected of them at work and role model what an inclusive environment looks and feels like (Strebel, 1996). In addition, leaders should also encourage continuous feedback and gather suggestions from employees about the intended cultural change and how best to realise it (Morgan & Zeffane, 2003; Shiner, 2021). Ideally, an inspirational leader will listen to, address, and mitigate the legitimate concerns of individuals who fear that changes will negatively affect them personally (Abbass, 2020).

Devastating consequences, such as increased conflict and reduced productivity, may ensue if the process of enacting cultural transformation is poorly managed (Emerson, 2022). This is because while managers may view diversification to be crucial for organisational competitiveness, employees may view such cultural change to be disruptive and unnecessary. These differing perceptions, left unattended, will result in the failure of the intended cultural

change in the organisation (Scott et al., 2003; Shiner, 2021). As Olson (2023) further suggested, it is important for leaders to demonstrate how a truly inclusive workplace could address some of the pertinent challenges faced by employees in the workplace. We suggest the following interventions for leaders hoping to create an inclusive diversity climate:

- Demonstrate empathetic concerns for individual needs, desires, and aspirations at work. Coauthor of *Woman of Our Time*, Lesly Heath, as quoted in Percy (2023), argued that by "taking care of employees and respecting their boundaries, leaders show their people that they are an important asset to the organisation, which hopefully encourages them to support the organisation in return." Try to listen to, address, and mitigate the legitimate concerns of individuals who fear that changes will negatively affect them personally.
- Communicate clear roles and expectations, which must be aligned with the overall values and diversity goals of the organisation. This entails providing employees with a clear understanding of how work responsibilities and processes could change, and how individuals can continue to meaningfully contribute to the organisation.
- Understand that cultural change takes time. Initial questions and resistance from middle-level managers and employees can be expected, but it remains critical that the culture takes root for the intended effects of the programme to ensue. More importantly, it is important for leaders to hold managers accountable for aligning their behaviours and interactions with others at work with the diversity goals of the organisation.

Communicate Managerial Motives for Diversity Imperatives

Second, the organisation's commitment to diversity at the highest levels must be clearly communicated as this will bolster employees' perceptions of the authenticity of diversity motives. Through daily interpersonal exchanges at work, managers need to ensure that their speech and conduct underscore the strategic imperative of encouraging inclusivity at work. This is because when employees perceive an alignment between the proposed diversification and core work activities, they are more likely to form favourable impressions of diversity initiatives. Positive employees' perceptions are also more likely to emerge when individuals perceive that substantial organisational resources have been invested in promoting diversity and inclusion (Ali & Konrad, 2017) and that diversification is a discretionary choice of the organisation (Eisenberger et al., 2020). We recommend that leaders take the following steps to communicate their genuine motivations for diversification:

- When determining the types of diversity programmes and training needed (e.g. unconscious bias training for newly promoted managers or interview skills development for hiring managers), leaders should seek out and incorporate the interests and perspectives of their employees. This could be gathered through attitude surveys where specific areas of concern can be highlighted by the employees for targeted interventions.
- Through the daily interpersonal exchanges at work, managers need to ensure that their speech and conduct promote the credibility and sincerity of the strategic imperative of increasing diversity at work. This is because when employees perceive an alignment of the proposed diversification and core work activities, they are more likely to form favourable impressions of the diversity and inclusion climate in the organisation.
- Leaders should work with human resource practitioners to ensure a strong alignment of personnel practices and diversity programmes in the organisation. Specifically, managers who champion inclusivity and promote a sense of belonging among their employees should be rewarded with financial and other incentives. On the contrary, managers who engage in discriminatory practices should be reprimanded in

accordance with the prevailing labour laws and disciplinary procedures of the organisation.

Redesign the Physical Workplace and Cultural Artefacts

Third, the physical workplace also needs to undergo changes to reinforce and symbolise the diversity and inclusion climate. Specifically, leaders should ensure that the physical workplace and cultural artefacts of the organisation reinforce the permanence and value of diversity initiatives. Specifically, leaders have to create new artefacts or modify existing ones to support the value of inclusion (Higgins & Mcallaster, 2004). These artefacts will enable better sensemaking of the permanence of the intended change for existing employees and help to signal the company's values and priorities to applicants and new employees (Hatch, 1993). Otherwise, inconsistency of speech and conduct of leaders with physical artefacts in the workplace will negatively colour employees' interpretations of managerial intentions and their commitment to create an inclusive workplace. Some ideas for implementation include the following:

- Engage in job redesign initiatives that will allow the organisation to cater to individual needs (e.g. flexible work arrangements to provide time for the fulfilment of caregiving responsibilities). In addition, leaders should also consider implementing guidelines to regulate after-hours communication to promote greater work-life balance for employees.
- Reconstruct the physical workplace to accommodate mature employees and Persons with Disabilities at work (e.g. installing ramps to increase accessibility and implementing sound and sonic technologies to allow for visually impaired employees to be included in the organisation) (Appannah & Biggs, 2015; Steels, 2015). This also supports the agenda of the World Health Organization for age-friendly workplaces (de Guzman et al., 2014; Grosch & Scholl, 2020; Scott et al., 2003).
- Managers should provide room for the unique and free expression of employees by allowing them to decorate their own personal space, setting aside a nondenominational prayer or meditation room, and reducing sensory overload in common areas to make them more friendly for neurodivergent workers. In addition, cultural and festive celebrations in the workplace may foster better understanding of individuals' unique backgrounds.

Conclusion

The domain of workforce diversity and inclusion is exposed to a confluence of powerful forces for change. Rapid and unpredictable change in the competitive environment, the emergence of new technologies, and the consistent decline of routine work require a new mandate of a well-integrated yet diverse group of employees. These developments shift the main challenge of managing surface-level diversity to including deep-level dissimilarity in a single organisation. Anchored in the existing research, we proposed three actions that leaders should focus on to develop an inclusive diversity climate at work: securing employee buy-in, communicating organisational commitment, and aligning workplace artefacts to underscore the importance of diversity and inclusion.

These actions to create a strong diversity climate are especially crucial today in light of the increased mobility of global talents across geographical borders (Kalev et al., 2006). Employees who perceive that managers have genuine intentions for creating an inclusive work climate may be more likely to remain in the organisation. This is because employees are motivated to remain with an organisation which they identify to be prestigious, positive, and prosocial, and that invokes a sense of pride (Hogg & Turner, 1987; Kossek & Zonia, 1993; Lee et al., 2013; Ng et al., 2019; Schaefer et al., 2019; Tsai et al., 2012). Moreover, an inclusive workplace fulfils the psychological contract that employees have with the organisation (Hutchison, 1997; Kurtessis et al., 2017) and increases the level of trust employees have towards the organisation and its

leaders (Shen & Zhang, 2019). As a result, employees will be more likely to contribute positively to the organisation through increased innovation and creativity at work (Eisenberger et al., 2001; Rhoades & Eisenberger, 2002).

On the contrary, when employees view their leaders to be ingenuine in promoting the diversity initiatives at work, they may instead perceive a breach of managerial ethics (De Roeck & Maon, 2018; Hur et al., 2018). Employees' perceptions of unfairness about hiring, compensation, and promotion decisions may follow thereafter (Cropanzano et al., 2003; Kickul, 2001; Schweitzer & Gibson, 2008). Consequently, employees may be less willing to innovate and take calculated risks at work, choosing instead to engage in deviant behaviours or leave the organisation (Hewlett et al., 2013; Neves & Eisenberger, 2014; Østergaard et al., 2011). In sum, employees' negative perceptions of managerial intentions and diversity initiatives more broadly will have a detrimental effect on diversity climate creation (Kossek & Zonia, 1993; O'Connor et al., 2016).

Finally, we note that our recommendations are foundational and not exhaustive. We remain in the early stages of developing and studying organisations with supportive diversity climates. Our ambition is to advance a set of principles and recommendations based on our current knowledge that can inform and inspire practitioners and scholars alike.

AUTHOR CONTRIBUTIONS

Both co-authors contributed equally to the conceptualisation of the article. The first author was responsible for drafting the manuscript and the second author provided mentoring and editing. All authors approve the final version of this manuscript.

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REFERENCES

Abbass, C. (2020, April 17). Here's how you get everyone to buy into a great company culture. *Forbes*. https://www.forbes.com/sites/forbeshumanresourcescouncil/2020/04/17/heres-how-you-get-everyone-to-buy-into-a-great-company-culture/?sh=25f1aad7f5be

Ali, M., & Konrad, A. M. (2017). Antecedents and consequences of diversity and equality management systems: The importance of gender diversity in the TMT and lower to middle management. *European Management Journal*, *35*(4), 440–453. https://doi.org/10.1016/j.emj.2017.02.002

Andrulis, R., & Sachdev, R. (2009). Diversity in the workplace: What's missing. *The International Journal of Diversity in Organizations, Communities, and Nations*, *9*(1), 175–186. https://doi.org/10.18848/1447-9532/CGP/v09i01/39705

Appannah, A., & Biggs, S. (2015). Age-friendly organisations: The role of organisational culture and the participation of older workers. *Journal of Social Work Practice*, *29*(1), 37–51. https://doi.org/10.1080/02650533.2014.993943

Barrett, D. J. (2002). Change communication: Using strategic employee communication to facilitate major change. *Corporate Communications: An International Journal*, *7*(4), 219–231. https://doi.org/10.1108/13563280210449804

Cokley, K. (2024). It's time to reconceptualize what "imposter syndrome" means for people of color. *Harvard Business Review*. https://hbr.org/2024/03/its-time-to-reconceptualize-what-imposter-syndrome-means-for-people-of-color

Colgan, F., Creegan, C., McKearney, A., & Wright, T. (2007). Equality and diversity policies and practices at work: Lesbian, gay and bisexual workers. *Equal Opportunities International*, *26*(6), 590–609. https://doi.org/10.1108/02610150710777060

Cropanzano, R., Goldman, B., & Folger, R. (2003). Deontic justice: The role of moral principles in workplace fairness. *Journal of Organizational Behavior*, *24*(8), 1019–1024. https://doi.org/10.1002/job.228

Davidson, M. N. (2011). *The end of diversity as we know it: Why diversity efforts fail and how leveraging difference can succeed.* San Francisco, CA: Berrett-Koehler Publishers, Inc.

de Guzman, A. B., Amrad, H. N., Araullo, R. C., & Cheung, H. B. (2014). A structural equation modeling of the factors affecting an age-friendly workplace. *Educational Gerontology*, *10*(6), 387–400. https://doi.org/10.1080/03601277.2013.802194

De Roeck, K., & Maon, F. (2018). Building the theoretical puzzle of employees' reactions to corporate social responsibility: An integrative conceptual framework and research agenda. *Journal of Business Ethics*, *149*(3), 609–625. https://doi.org/10.1007/s10551-016-3081-2

Dixon-Fyle, S., Huber, C., del Mar Martínez Márquez, M., Prince, S., & Thomas, A. (2023, December 5). *Diversity matters even more: The case for holistic impact*. McKinsey & Company. https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-matters-even-more-the-case-for-holistic-impact

Dobbin, F., Kim, S., & Kalev, A. (2011). You can't always get what you need: Organizational determinants of diversity programs. *American Sociological Review*, *76*(3), 386–411. https://doi.org/10.1177/0003122411409704

Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology*, *86*(1), 42–51. https://psycnet.apa.org/doi/10.1037/0021-9010.86.1.42

Eisenberger, R., Shanock, L. R., & Wen, X. (2020). Perceived organizational support: Why caring about employees counts. *Annual Review of Organizational Psychology and Organizational Behavior*, *7*, 101–124. https://doi.org/10.1146/annurev-orgpsych-012119-044917

Emerson, M. S. (2022, November 18). *7 reasons why change management strategies fail and how to avoid them*. Harvard Division of Continuing Education. https://professional.dce.harvard.edu/blog/7-reasons-why-change-management-strategies-fail-and-how-to-avoid-them/

Estrada, S. (2021, February 18). *'Just going through the motions': Employers fail to make DEI a business function, report finds* (Dive Brief). HRDive. https://www.hrdive.com/news/just-going-through-the-motions-employers-fail-to-make-dei-a-business-fun/595293/#:~:text=DEI%20is%20treated%20as%20more,%2C%E2%80%9D%20according%20to%20the%20report

Garcia, J. E., & Hoelscher, K. J. (2008). *Managing diversity flashpoints in higher education*. Plymouth, UK: Rowman & Littlefield Publishers, Inc.

Gonzalez, J. A., & Denisi, A. S. (2009). Cross-level effects of demography and diversity climate on organizational attachment and firm effectiveness. *Journal of Organizational Behavior*, *30*(1), 21–40. https://doi.org/10.1002/job.498

Grosch, J. W., & Scholl, J. C. (2020). Designing age-friendly workplaces: An occupational health perspective. In S. J. Czaja, J. Sharit, & J. B. James (Eds.), *Current and emerging trends in aging and work* (pp. 429–451). Cham: Springer. https://doi.org/10.1007/978-3-030-24135-3_22

Hatch, M. J. (1993). The dynamics of organizational culture. *The Academy of Management Review*, *18*(4), 657–693. https://doi.org/10.2307/258594

Herdmann, A. O., & McMillan-Capehart, A. (2010). Establishing a diversity program is not enough: Exploring the determinants of diversity climate. *Journal of Business and Psychology*, *25*, 39–53. https://doi.org/10.1007/s10869-009-9133-1

Hewlett, S. A., Marshall, M., & Sherbin, L. (2013, December). How diversity can drive innovation. *Harvard Business Review*, *91*(12), 30–31. https://hbr.org/2013/12/how-diversity-can-drive-innovation

Higgins, J. M., & Mcallaster, C. (2004). If you want strategic change, don't forget to change your cultural artifacts. *Journal of Change Management*, *4*(1), 63–73. https://doi.org/10.1080/1469701032000154926

Hofhuis, J., van den Zee, K. I., & Otten, S. (2012). Social identity patterns in culturally diverse organizations: The role of diversity climate. *Journal of Applied Social Psychology*, *42*(4), 964–989. https://doi.org/10.1111/j.1559-1816.2011.00848.x

Hogg, M. A., & Turner, J. C. (1987). Intergroup behavior, self-stereotyping and the salience of social categories. *British Journal of Social Psychology*, *26*(4), 325–340. https://doi.org/10.1111/j.2044-8309.1987.tb00795.x

Hubbart, J. A. (2023). Organizational change: Considering truth and buy-in. *Administrative Sciences*, *13*(1), Article 3. https://doi.org/10.3390/admsci13010003

Hur, W.-M., Moon, T.-W., & Ko, S.-H. (2018). How employees' perceptions of CSR increase employee creativity: Mediating mechanisms of compassion at work and intrinsic motivation. *Journal of Business Ethics*, *153*(3), 629–644. https://doi.org/10.1007/s10551-016-3321-5

Hutchison, S. (1997). A path model of perceived organizational support. *Journal of Social Behavior & Personality*, *12*(1), 159–174.

Ip, E., Leibbrandt, A., & Vecci, J. (2020). How do gender quotas affect workplace relationships? Complementary evidence from a representative survey and labor market experiments. *Management Science*, *66*(2), 805–822. https://doi.org/10.1287/mnsc.2018.3234

Johnson & Johnson. (2023, May). *Diversity, equity, and inclusion policy*. https://www.jnj.com/about-jnj/policies-and-positions/diversity-equity-and-inclusion-policy

Kalev, A., Dobbin, F., & Kelly, E. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review*, *71*, 589–617. https://doi.org/10.1177/000312240607100404

Kaplan, D. M., Wiley, J. W., & Maertz, C. P., Jr. (2011). The role of calculative attachment in the relationship between diversity climate and retention. *Human Resource Management*, *50*(2), 271–287. https://doi.org/10.1002/hrm.20413

Kelly, N. (2021, March 2). Implementing inclusive policies across a global organization. *Harvard Business Review*. https://hbr.org/2021/03/implementing-inclusive-policies-across-a-global-organization

Kickul, J. (2001). When organizations break their promises: Employee reactions to unfair processes and treatment. *Journal of Business Ethics*, *29*(4), 289–307. https://doi.org/10.1023/A:1010734616208

Kossek, E. E., & Zonia, S. C. (1993). Assessing diversity climate: A field study of reactions to employer efforts to promote diversity. *Journal of Organizational Behavior*, *14*(1), 61–81. https://doi.org/10.1002/job.4030140107

Kottke, J. L., & Agars, M. (2005). Understanding the processes that facilitate and hinder efforts to advance women in organizations. *Career Development International*, *10*(3), 190–202. https://doi.org/10.1108/13620430510598319

Kunze, F., Boehm, S., & Bruch, H. (2013). Organizational performance consequences of age diversity: Inspecting the role of diversity-friendly HR policies and top managers' negative age stereotypes. *Journal of Management Studies*, *50*(3), 413–442. https://doi.org/10.1111/joms.12016

Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management*, *43*(6), 1854–1884. https://doi.org/10.1177/0149206315575554

Lambouths, D., III., Scarborough, W., & Hollbrook, A. (2019, October 4). Who supports diversity policies? It depends on the policy. *Harvard Business Review*. https://hbr.org/2019/10/who-supports-diversity-policies-it-depends-on-the-policy

Lee, E., Park, S.-Y., & Lee, H. J. (2013). Employee perception of CSR activities: Its antecedents and consequences. *Journal of Business Research*, *66*(10), 1716–1724. https://doi.org/10.1016/j.jbusres.2012.11.008

Leslie, L. M. (2019). Diversity initiative effectiveness: A typological theory of unintended consequences. *Academy of Management Review*, *44*(3), 538–563. https://doi.org/10.5465/amr.2017.0087

Mannix, E., & Neale, M. A. (2005). What differences make a difference? The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest*, *6*(2), 31–55. https://doi.org/10.1111/j.1529-1006.2005.00022.x

Mathews, B. W., & Crocker, T. (2016). Defining "buy-in:" Introducing the buy-in continuum. *Organization Development Journal*, *34*(2), 81–96.

McKay, P. F., Avery, D. R., Liao, H., & Morris, M. A. (2011). Does diversity climate lead to customer satisfaction? It depends on the service climate and business unit demography. *Organization Science*, *22*(3), 788–803. https://doi.org/10.1287/orsc.1100.0550

McKay, P. F., Avery, D. R., & Morris, M. A. (2008). Mean racial-ethnic differences in employee sales performance: The moderating role of diversity climate. *Personnel Psychology*, *61*(2), 349–374. https://doi.org/10.1111/j.1744-6570.2008.00116.x

McKay, P. F., Avery, D. R., & Morris, M. A. (2009). A tale of two climates: Diversity climate from subordinates and managers perspectives and their role in store unit sales performance.

Personnel Psychology, *62*(4), 767–791. https://doi.org/10.1111/j.1744-6570.2009.01157.x

McKay, P. F., Avery, D. R., Tonidaniel, S., Morris, M. A., Hernandez, M., & Hebl, M. R. (2007). Racial differences in employee retention: Are diversity climate perceptions the key? *Personnel Psychology*, *60*(1), 35–62. https://doi.org/10.1111/j.1744-6570.2007.00064.x

Meyer, J. P., Srinivas, E., Lal, J. B., & Topolnytsky, L. (2007). Employee commitment and support for an organizational change: Test of the three-component model in two cultures. *Journal of Occupational and Organizational Psychology*, *80*(2), 185–211. https://doi.org/10.1348/096317906X118685

Moon, M. Y. (2009). Making sense of common sense for change management buy-in. *Management Decision*, *47*(3), 518–532. https://doi.org/10.1108/00251740910946769

Morgan, D., & Zeffane, R. (2003). Employee involvement, organizational change and trust in management. *International Journal of Human Resource Management*, *14*(1), 55–75. https://doi.org/10.1080/09585190210158510

Naff, K. C., & Kellough, J. E. (2003). Ensuring employment equity: Are federal diversity programs making a difference? *International Journal of Public Administration*, *26*(12), 1307–1336. https://doi.org/10.1081/PAD-120024399

Neves, P., & Eisenberger, R. (2014). Perceived organizational support and risk taking. *Journal of Managerial Psychology*, *29*(2), 187–205. https://doi.org/10.1108/JMP-07-2011-0021

Ng, T. Y., Yam, K., & Aguinis, H. (2019). Employee perceptions of corporate social responsibility: Effects on pride, embeddedness, and turnover. *Personnel Psychology*, *72*(1), 107–137. https://doi.org/10.1111/peps.12294

O'Connor, A., Paskewitz, E. A., Jorgenson, D. A., & Rick, J. M. (2016). How changes in work structure influence employees' perceptions of CSR: Millionaire managers and locked-out laborers. *Journal of Applied Communications Research*, *44*(1), 40–59. https://doi.org/10.1080/00909882.2015.1116706

Olson, A. B. (2023, February 6). Getting employee buy-in for organizational change. *Harvard Business Review*. https://hbr.org/2023/02/getting-employee-buy-in-for-organizational-change

Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy*, *40*(3), 500–509. https://doi.org/10.1016/j.respol.2010.11.004

Percy, S. (2023, September 14). How can leaders get buy-in for largescale organizational change? *Forbes*. https://www.forbes.com/sites/sallypercy/2023/09/14/how-can-leaders-get-buy-in-for-largescale-changes/?sh=2c22a80e2250

Puritty, C., Strickland, L. R., Alia, E., Blonder, B., Klein, E., Kohl, M. T., McGee, E., Quintana, M., Ridley, R. E., Tellman, B., & Gerber, L. R. (2017). Without inclusion, diversity initiatives may not be enough: Focus on minority experiences in STEM, not just numbers. *Science*, *357*, 1101–1102. https://doi.org/10.1126/science.aai9054

PurposeBrand. (2023, November 9). *Corporate diversity data: What Fortune 500 DEI reports reveal*. https://purposebrand.com/blog/diversity-report-examples-fortune-2023/

Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, *87*(4), 698–714. https://psycnet.apa.org/doi/10.1037/0021-9010.87.4.698

Roberson, Q., Avery, D. R., & Leigh, A. (2024). Lights, camera, action: Moving beyond performative diversity management to drive change. *Academy of Management Perspectives*, *38*(2), 197–213. https://doi.org/10.5465/amp.2021.0188

Robertson, K. M., O'Reilly, J., & Hannah, D. R. (2020). Finding meaning in relationships: The impact of network ties and structure on the meaningfulness of work. *Academy of Management Review*, *45*(3), 596–619. https://doi.org/10.5465/amr.2015.0242

Rua-Gomez, C., Carnabuci, G., & Goossen, M. (2024, March 20). Research: How women can build high-status networks. *Harvard Business Review*. https://hbr.org/2024/03/research-how-women-can-build-high-status-networks

SBS Transit. (2022, September 9). *Diversity, equity and inclusion (DEI) policy*. https://www.sbstransit.com.sg/diversity-equity-and-inclusion-dei-policy

Schaefer, S. D., Terlutter, R., & Diehl, S. (2019). Is my company really doing good? Factors influencing employees' evaluation of the authenticity of their company's corporate social responsibility engagement. *Journal of Business Research*, *101*, 128–143. https://doi.org/10.1016/j.jbusres.2019.03.030

Schweitzer, M. E., & Gibson, D. E. (2008). Fairness, feelings, and ethical decision-making: Consequences of violating community standards of fairness. *Journal of Business Ethics*, *77*, 287–301. https://doi.org/10.1007/s10551-007-9350-3

Scott, T., Mannion, R., Davies, H. T., & Marshall, M. N. (2003). Implementing culture change in health care: Theory and practice. *International Journal of Quality Health Care*, *15*(2), 111–118. https://doi.org/10.1093/intqhc/mzg021

Shen, J., & Zhang, H. (2019). Socially responsible human resource management and employee support for external CSR: Roles of organizational CSR climate and perceived CSR directed toward employees. *Journal of Business Ethics*, *156*, 875–888. https://doi.org/10.1007/s10551-017-3544-0

Shiner, J. (2021, August 2). How to build a culture of security. *Forbes*. https://www.forbes.com/sites/forbestechcouncil/2021/08/02/how-to-build-a-culture-of-security/?sh=4b1502cb3753

Steels, S. (2015). Key characteristics of age-friendly cities and communities: A review. *Cities*, *47*, 45–52. https://doi.org/10.1016/j.cities.2015.02.004

Strebel, P. (1996, May 1). Why do employees resist change? *Harvard Business Review*, https://hbr.org/1996/05/why-do-employees-resist-change

Taniguchi, M. (2006). Succeeding where others fail to try: A case study of diversity management in the Japanese retail sector. *Career Development International*, *11*(3), 216–229. https://doi.org/10.1108/13620430610661740

Thomson, K., de Chernatony, L., Arganbright, L., & Sajid, K. (1999). The buy-in benchmark: How staff understanding and commitment impact brand and business performance. *Journal of Marketing Management*, *15*(8), 819–835. https://doi.org/10.1362/026725799784772684

Tsai, H., Tsang, N. K., & Cheng, S. K. (2012). Hotel employees' perceptions on corporate social responsibility: The case of Hong Kong. *International Journal of Hospitality Management*, *31*(4), 1143–1154. https://doi.org/10.1016/j.ijhm.2012.02.002

United Nations Sustainable Development Group. (2017). *TOGETHER POSSIBLE: Gearing up for the 2030 agenda*. United Nations. https://unsdg.un.org/resources/together-possible-gearing-2030-agenda

Waldman, D. A., & Sparr, J. L. (2023). Rethinking diversity strategies: An application of paradox and positive organization behavior theories. *Academy of Management Perspectives*, *37*(2), 172–192. https://doi.org/10.5465/amp.2021.0183

Wargo, K., & Hurwitz, C. (2024, March 5). An employer's guide to supporting workers with autism. *Harvard Business Review*. https://hbr.org/2024/03/an-employers-guide-to-supporting-workers-with-autism

Driving With Pride: The Professionalisation of Singapore's Public Bus Driving Industry

Zainal Shah Suhaila, Ethel Wee, and Samuel Chng

Abstract

Public transportation systems worldwide face the complex task of balancing operational efficiency, commuter satisfaction, and workforce well-being. Singapore's public bus industry offers a useful example of how strategic transformations, collaborative partnerships, and targeted workforce development can drive meaningful improvements, from a historically fragmented sector into a more efficient and reliable transport system. This practitioners' insights paper provides an overview of the industry's historical evolution, key policy reforms, the importance of tripartism, and future directions, offering insights into its continued efforts to professionalise the public bus driving industry, and adapt and innovate in a rapidly changing landscape.

Introduction

Across global cities, public transportation plays a crucial role in shaping sustainable urban mobility, reducing congestion, enabling accessibility, and enhancing economic productivity. As urban populations grow, transport systems must continuously evolve to meet increasing demands while ensuring efficiency, sustainability, and commuter convenience.

In this broader context, Singapore has been at the forefront of integrated transport planning, prioritising public transit, walking, and cycling to create a car-lite and commuter-friendly urban environment. Over the years, Singapore's transport policies have seen success in promoting the Walk–Cycle–Ride framework—where walking, cycling, and public transport form the primary travel modes. Between 2016 and 2022, the share of peak-period journeys made via Walk–Cycle–Ride rose from 71% to 74%, while the proportion of residents who drove declined from 29% to 26% (Chee, 2024). The 2020 Population Census further reported that 57.7% of employed residents commuted via combinations of public bus, Mass Rapid Transit (MRT), and Light Rail Transit (LRT), up from 54.6% in 2010 to 57.7% in 2020 (Kok, 2021).

While MRT and LRT ridership surpassed prepandemic levels for the first time, averaging 3.41 million and 210,000 daily trips respectively (N. T. Lee, 2025), public buses have remained a steadfast pillar of Singapore's transport system. In 2024, average daily bus trips reached 3.84 million, only slightly below 2019's 4.1 million (N. T. Lee, 2025), accounting for 51.4% of the average daily ridership in 2024 (Land Transport Authority [LTA], n.d.-a). The continued reliance on buses highlights the industry's resilience and its critical role in supporting the broader transport network.

A major factor ensuring the continued resilience of the bus industry is the professionalisation of its workforce—structured efforts over the decades to elevate job standards, enhance technical expertise, and strengthen service competencies. Complementing this is workforce upskilling, which encompasses continuous training and retraining initiatives to equip transport workers with the skills needed for an evolving, technology-driven, and commuter-centric transport system. As Singapore's transport ecosystem becomes increasingly digitalised and operational demands grow more complex, a skilled and adaptable workforce will remain vital in navigating future challenges.

Against this backdrop, this practitioners' insights paper examines the evolution of Singapore's public bus industry, highlighting the pivotal role transport workers have historically played, the reforms that have advanced their interests, and the importance of tripartite efforts in driving these improvements. It also explores the industry's future trajectory, emphasising workforce upskilling as a key factor in ensuring the long-term sustainability and resilience of public bus services.

Key Historical Developments of the Public Bus Workforce

1940s–1970s: Early Challenges and Nationalisation

Transportation workers have long stood at the crossroads of social and economic change, serving as catalysts for transformative labour movements worldwide. In the United Kingdom, the Great London Transport Strike of 1911 exposed stark wage disparities and unsafe working conditions, compelling authorities to establish better labour protections and fairer practices (Taplin, 2012). In the United States, the Montgomery Bus Boycott of 1955 emerged as a defining moment in the civil rights movement, highlighting the systemic racial discrimination and the broader significance of bus systems to community life (Thornton, 2014).

Similarly, in Singapore, the trajectory of the public bus industry has been shaped by the influence of labour movements. Before nationalisation, Singapore's public bus services were operated by multiple private companies, leading to inconsistent schedules, poor maintenance, and unreliable fare collection (M. Lee, 2017). The 1940s and 1950s witnessed numerous strikes as bus workers united to demand equitable wages and improved conditions amid exploitative practices and operational inefficiencies. Such disruption signalled the need for structural reform,

culminating in the landmark nationalisation of the industry in 1973 led by the government (M. Lee, 2017). This move consolidated fragmented private operators into a single entity under Singapore Bus Services (SBS), streamlining operations, reducing corruption, and laying a stable foundation for future development—as detailed in M. Lee's (2017) review of public bus history from the early 1900s to the 1970s. Nationalisation not only stabilised the industry but also paved the way for large-scale improvements in infrastructure, service delivery, and workforce management in the decades that followed.

1970s–2000s: Modernisation and Workforce Changes

With the nationalisation of the public bus sector in 1973 establishing a foundation for greater regulatory oversight, it followed that the industry entered a phase of rapid modernisation from there on, marked by operational overhauls to enhance efficiency and service quality, cost reduction initiatives, and corporate restructuring efforts that reshaped its trajectory.

Evolution of Bus Types, Fare Payment, and Operations

One major advancement was the transformation of bus models to accommodate increasing passenger demands. High-capacity buses—namely, in the form of double-decker or articulated buses—were deployed from 1977 to increase passenger capacity while optimising manpower utilisation (Teo, 2019). Feeder bus services later emerged in 1975 to connect residential areas with major transport nodes, laying the foundation for Singapore's integrated public transport system (H. Ng, 2017). The rapid growth and modernisation of Singapore's public bus fleet was further marked by the introduction of air-conditioned buses in 1984. By the late 1990s, air-conditioned buses had become the industry standard, setting new expectations for commuter comfort and service quality (Teo, 2019).

Another milestone was the shift from a Two-Man Operation, consisting of a driver and a conductor, to the One-Man Operation (OMO) system (SBS Transit, n.d.-a). Introduced gradually in 1975, this transition aimed to streamline fare collection by eliminating the need for conductors. In 1982, the OMO ticketing system was implemented, allowing for graduated fares based on distance travelled (SBS Transit, n.d.-a) and by 1984, the role of bus conductors was fully phased out (Teo, 2019). While the OMO system reduced operational costs—saving an estimated $30 million in Singapore dollars annually for SBS (Teo, 2019)—it also increased the responsibilities of bus drivers, who had to manage driving, fare collection, and passenger boarding independently.

To enhance fare collection efficiency, the EZ-Link card was launched in 2002 as a contactless smart card, requiring commuters to tap in and out seamlessly on a card reader when they boarded and alighted from the bus. This system marked a significant upgrade from the previous OMO ticketing system, as it automated fare deduction based on distance travelled, effectively eliminating fare discrepancies and opportunities for underpayment (Menon & Loh, 2006). By removing manual fare transactions, it also improved transaction speeds, streamlining the overall commuter experience (Menon & Loh, 2006).

As Singapore's bus industry modernised through fleet expansion, fare automation, and operational efficiencies, structural changes unfolded through corporate restructuring and sector diversification, shaping a more competitive and integrated transport system.

Corporate Restructuring and Diversification of the Public Bus Industry (1990s–2000s)

For almost a decade after nationalisation, SBS was the sole operator of public buses in Singapore. Subsequently, a second bus company was formed in 1981 called Trans-Island Bus Services (TIBS) to foster a "more competitive and diverse" bus industry (LTA, n.d.-b). TIBS expanded rapidly, investing S$8 million into acquiring new buses and growing its fleet from 90 buses in 1981 to 361 by 1987 (Teo, 2019).

Recognising the importance of integrating bus and rail services, SBS, TIBS, and Singapore Mass Rapid Transit (SMRT), which initially managed only rail services, collaborated in 1987 to establish TransitLink. This initiative introduced a common fare system across buses and trains, enabling seamless transfers and laying the foundation for an integrated public transport network.

The early 2000s then saw a wave of mergers and corporate restructuring within the industry. In 2001, SMRT acquired TIBS, forming Singapore's first multimodal public transport operator managing bus, rail, and taxi services (Teo, 2019). That same year, SBS rebranded itself as SBS Transit, reflecting its expansion into rail operations. The largest industry consolidation occurred in 2003 when SBS's parent company, DelGro Corporation, merged with Comfort Group to form ComfortDelGro, which became the dominant public transport operator, leading to the corporation's dominant share of the public bus industry with a 75% share of the bus fleet in 2005 (Teo, 2019).

With bus operators becoming a part of corporations and bus drivers taking on more roles and responsibilities, there was a need to elevate the professional status of public bus driving as a career. Thus, in 1999, the title of "bus captains" (SBS Transit, n.d.-a) was given to public bus drivers and has been in use ever since.

Altogether, these developments laid the foundation for future industry advancements, setting the stage for further modernisation and professionalisation in the 21st century.

Contemporary Developments in the 21st Century: Challenges and Key Reforms

Although efforts were made to professionalise the industry, the 21st century introduced new and complex challenges to Singapore's public bus sector, prompting major reforms that involved the government, transport operators, and unions to improve service reliability, workforce conditions, and long-term industry sustainability. As Singapore's population grew and commuter expectations rose, the industry had to adapt through a combination of government intervention, structural overhauls, and workforce development initiatives.

Growing Service Demand and Government Intervention

Public buses in Singapore have been privately operated by companies such as SBS Transit and SMRT since the 1970s (M. Lee, 2017). However, these operators did not receive direct operational subsidies, relying instead on fare revenue (Menon, 2016). While the government supported infrastructure development—such as bus lanes, interchanges, and shelters—rising commuter demand and operational costs made it increasingly challenging for private operators to sustain service quality.

In response, the LTA, a government agency under Singapore's Ministry of Transport established in 1995 to oversee the country's land transport infrastructure and systems, assumed the role of central bus planner in 2009, aligning with the Land Transport Master Plan 2008 to better integrate bus and rail networks (Fwa, 2016).

The rapid growth of Singapore's population—from 4.8 million in 2008 to 5.3 million in 2012—alongside a 28% in Gross Domestic Product, also placed strain on the public bus system (Fwa, 2016). The increasing demand for bus services, combined with economic growth and higher commuter expectations, made it difficult for private operators such as SBS Transit and SMRT to keep pace without government support. As demand outpaced operator capacity, urgent action was needed to accelerate plans previously laid out in the Land Transport Master Plan 2008.

Consequently in 2012, LTA launched the Bus Service Enhancement Programme to cope with the greater demand for public bus services, injecting 1,000 government-owned buses into the fleets of SBS Transit and SMRT over 5 years at a cost of $1.1 billion in Singapore dollars (Teo, 2019). The addition of these buses improved frequency, reduced waiting times, and expanded services across 80 new and 218 existing routes (Teo, 2019). While initially controversial due to public concerns over taxpayer funding, the programme successfully

enhanced service reliability and commuter experience, laying the groundwork for further structural changes.

Workforce Challenges and Reforms

Alongside service gaps, workforce shortages emerged as a major challenge within the sector. A prime concern was the persistent recruitment and retention difficulties, largely due to societal perceptions of bus driving being a low-status, blue-collar job amidst a highly educated workforce (Fang, 2014). This in turn led to increasing reliance on foreign bus captains to address manpower gaps. Nevertheless, the heavy dependence on foreign bus captains led to concerns about workforce stability, wage disparities, and workplace conditions, with industrial actions such as the 2012 SMRT strike by bus drivers from China highlighting tensions within the sector (Tan, 2016).

To address the challenges surrounding recruitment and high attrition rates within the public bus driving sector, Singapore implemented a series of reforms aimed at improving the working conditions and professional development opportunities for bus captains, including the Bus Contracting Model (BCM), the Progressive Wage Model (PWM), and the Singapore Bus Academy (SGBA).

The Bus Contracting Model: Enhancing Service Efficiency and Competition

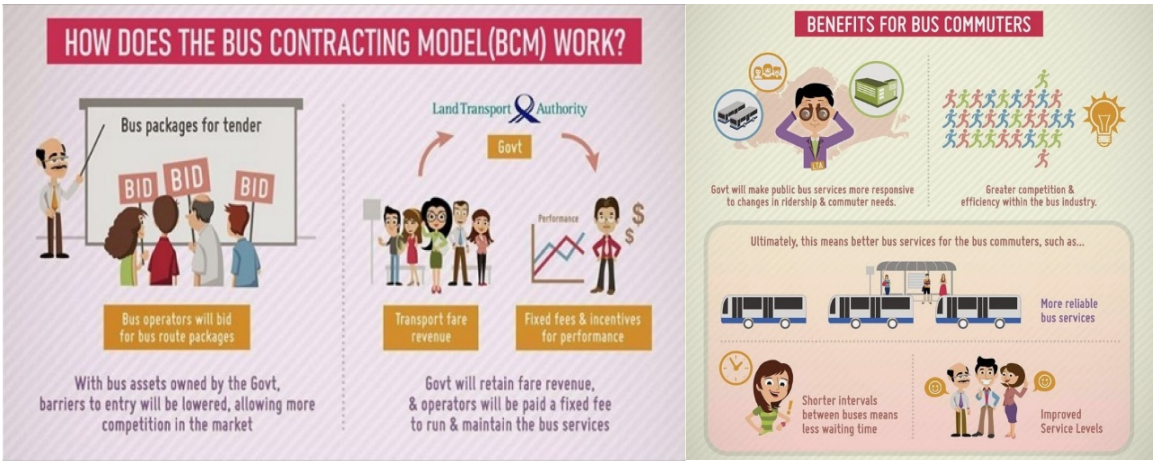
The introduction of the BCM in 2014 and its subsequent implementation in 2016 marked a significant shift in the structure of Singapore's public bus sector. Under the BCM, the government, through LTA, retained ownership of key assets, including depots, buses, and ticketing systems, while awarding service contracts to Public Transport Operators (PTOs) through competitive tenders (LTA, n.d.-c) as seen in Figure 1.

This shift ensured greater efficiency, improved service standards, and allowed the government to focus on service reliability rather than operator profitability. Notable service improvements included reduced peak-hour crowding and a 25% decrease in additional waiting times across 292 bus services (LTA, 2017). Additionally, this approach led to a renewed focus on investing in the careers of bus captains, fostering healthy competition, and encouraging operators to invest in workforce training and adopting innovative human resource practices (LTA, n.d.-c; Today, 2014).

The BCM also expanded market competition, introducing two new foreign-owned bus operators—Tower Transit Singapore and Go-Ahead Singapore—both of which successfully tendered for several bus packages (Tower Transit Singapore, 2020). Their entry, alongside the incumbents SBS Transit and SMRT, created a more competitive and diversified public bus sector, forming the four PTOs in Singapore today.

Figure 1

Infographic on Bus Contracting Model



Note. From Bus Contracting Model [Infographic], by Land Transport Authority, n.d.-c.

The Progressive Wage Model: Elevating Workforce Standards and Career Progression

Prior to the implementation of the BCM, the PWM was introduced in 2012 as part of Singapore's broader effort to uplift low-wage sectors and strengthen the local workforce. The PWM, initiated by the Labour Movement and spearheaded by the National Transport Workers' Union (NTWU) for the sector, functioned as an alternative to the traditional minimum wage. As discussed by Ho (2023), the aim of the PWM was to increase basic wages, particularly for lower-wage workers. This had a significant impact on the sector as bus captains now had the potential to increase their monthly earnings, upgrade their skills, and gain additional opportunities for career advancement to roles in operations, management, and training (SBS Transit, n.d.-b).

The initial phase of the PWM was rolled out across selected sectors with SBS Transit taking the lead in implementing the PWM for bus captains in 2012 and with SMRT establishing a similar PWM scheme later in 2013 (Sim, 2013). Apart from salary increment, the PWM framework adopted by SBS Transit also focused on enhancing skillsets and strengthening productivity. While the PWM framework is not currently uniform across the public bus driving sector, these changes have set the stage for meaningful discussions and practical next steps on increased remuneration for bus captains, in line with increasing work demands and responsibilities.

The establishment of the BCM in tandem with the PWM also signalled positive headway in the recruitment of local bus captains (LTA, 2017). The introduction of the BCM and PWM thus provided further catalyst for positive change, laying the foundations for progress towards a more competitive and dynamic public bus driving industry.

The Singapore Bus Academy: Driving Excellence in Public Transport Training

The 2016 launch of the SGBA as an anchor initiative of the Public Bus Industry Manpower Plan marked another significant milestone in Singapore's ongoing professionalisation of its transport workforce. Recognising the need for structured skills training and career progression pathways, the Public Bus Industry Manpower Plan was developed as a tripartite effort, bringing together the public sector (LTA and Singapore Workforce Development Agency), unions (NTWU and National Trades Union Congress's Employment and Employability Institute [NTUC's e2i]), and the private sector (four PTOs—SBS Transit, SMRT, Tower Transit Singapore, and Go-Ahead Singapore) (SkillsFuture Singapore, 2016). To formalise their commitment to workforce development, these stakeholders signed a Memorandum of Understanding, leading to the establishment of SGBA as a centralised training centre supported by NTUC's e2i (SkillsFuture Singapore, 2016).

At SGBA, bus captains and technicians receive structured skills training, including foundational and refresher courses to promote continuous learning and workforce adaptability (Employment and Employability Institute [e2i], n.d.; LTA, n.d.-d; Ong, 2025). Aligned with the BCM, this academy provides a more rigorous training framework, equipping bus captains with opportunities to enhance their skills and stay relevant with industry best practices (Choo, 2016; e2i, n.d.; LTA, 2017, n.d.-c). For instance, all new bus captains must complete the academy's standardised Enhanced Vocational Licence Training Programme, which covers driving skills, safety protocols, and customer service to uphold industry standards (Figure 2).

Beyond training, NTUC's e2i plays a crucial role in supporting the wider public bus industry. This includes job matching, such as organising various thematic job fairs for the public transport industry, inclusive of direct referrals to PTOs. Additionally, NTUC's e2i facilitates Place-and-Train programmes for bus captains and engineers, while also serving as the programme manager for SGBA (e2i, n.d.). This support, alongside efforts by NTWU and the PTOs, has been instrumental in ensuring the academy's success and sustainability.

SGBA's impact is reflected in its strong training outcomes and workforce development efforts. In the first 10 months, SGBA successfully trained 1,000 bus captains, out of which 70% were Singaporeans (Abdullah, 2017). As of December 2024, over 10,000 bus captains had completed the Enhanced Vocational Licence Training Programme, while more than 4,000—around 40% of active bus captains—had undergone the refresher course (Chelvan, 2025a; Ong, 2025). Additionally, some PTOs also enrolled their employees in Master Classes offered in the academy, covering topics such as Serving Commuters with Special Needs and Incident Management On-Board Buses (SBS Transit, 2019).

The effectiveness of SGBA stems from its foundation as a tripartite collaboration, with the government (represented by LTA) providing strategic oversight and funding, PTOs implementing in-house training, and unions like NTWU as well as NTUC's e2i laying the foundations and facilitating workforce training and career development (Baktee, 2017). This collaborative and multistakeholder approach has significantly elevated the level of professionalism within the public bus driving sector to provide continuous upskilling opportunities for bus captains.

Figure 2

Infographic on the Singapore Bus Academy

Note. From Public Bus (Singapore Bus Academy) [Infographic], by National Trades Union Congress's Employment and Employability Institute, n.d.

These tripartite efforts put in place the necessary elements to support the continuous professionalisation of the public bus driving industry and support for the bus captain career.

The Future of the Public Bus Workforce: Emerging Opportunities and Strategic Imperatives

Today, Singapore's public bus sector stands at a pivotal juncture, where evolving societal needs and industry advancements are shaping its future. In response, three key priorities, driven primarily by environmental, demographic, and technological shifts, have come to the forefront to guide its continued development, which also comes with significant implications for the workforce and their capabilities to navigate these changes.

Advancing Environmental Sustainability

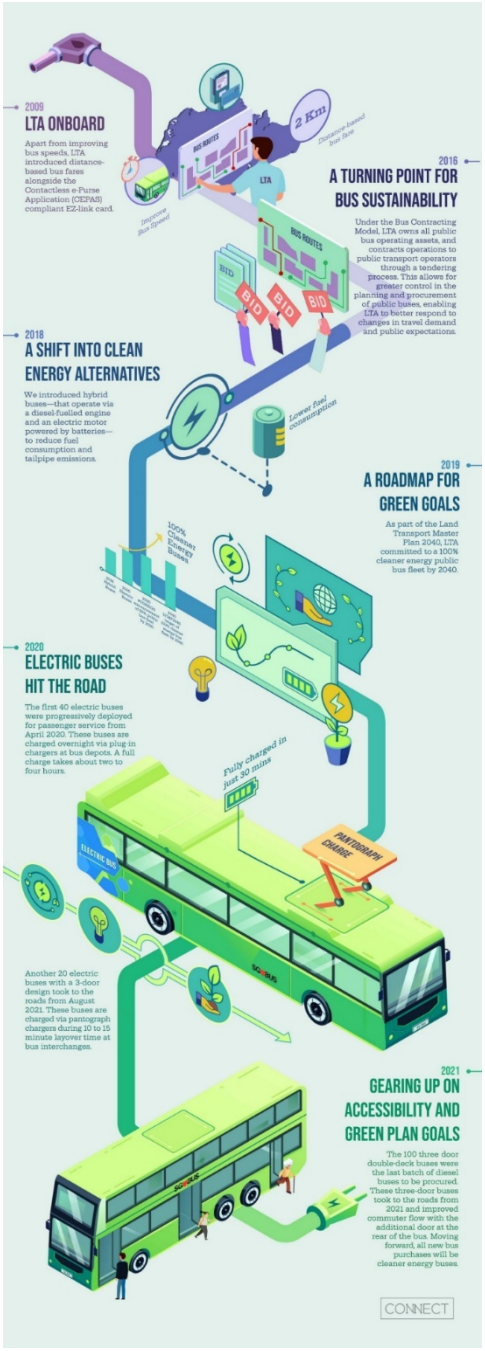
Singapore has made great headway in its transition to cleaner, more sustainable energy sources over the past decade as seen in Figure 3. With the turn of the century, key landmarks were etched in history when PTOs started exploring alternative fuel sources. In 2002, SBS Transit took a pioneering step by acquiring a fleet of 12 Compressed Natural Gas-powered Volvo B10BLE buses, while 2010 saw the introduction of the first hybrid and hydrogen fuel cell buses (SBS Transit, n.d.-c). With Singapore targeting a fully cleaner energy bus fleet by 2040 (LTA, 2023), the adoption of electric and hybrid buses has become increasingly prevalent.

Unlike conventional diesel-powered vehicles, electric and hybrid vehicles necessitate specialised maintenance procedures, and technical staff have to be equipped with the skills to manage high-voltage battery systems safely (Kok, 2022). Bus captains, too, must undergo specialised training in energy-efficient driving practices and troubleshooting procedures to

optimise battery performance, and minimise operational disruptions, ensuring a seamless transition to a greener, more efficient transport network.

Figure 3

Infographic on Singapore's Bus Sustainability Journey



Note. From Charging Up the Singapore Bus Scene: History of Buses [Infographic], by Land Transport Authority, 2023.

Adapting to Demographic Shifts and Commuter Needs

As Singapore's demographic profile shifts and becomes more diverse, enhancing accessibility remains a core objective. Over the past decade, significant efforts have been made to create a more inclusive public transport system. These include introducing ramps (Figure 4), deploying three-door buses for easier boarding (LTA, 2021) as shown in Figure 5, and retrofitting

stroller restraint systems on all wheelchair-accessible buses by 2020 (Government of Singapore, 2020; LTA, n.d.-e) to facilitate convenient boarding for different commuter profiles, such as parents with strollers and passengers in wheelchairs (PIWs).

These improvements have expanded the job scope and responsibilities of bus captains, requiring them to be equipped with new skills to cater to diverse commuter needs. For one, they now undergo specialised training in assisting PIWs, including stopping the bus close to the curb, deploying the manual ramp, and supporting PIWs during boarding, alighting, and fare payment (LTA, n.d.-e; SBS Transit, n.d.-d).

Assistive technologies have also been part of this journey. In 2018, a digital Passenger Information Display System was added to all new buses, with audio announcements to assist passengers with visual and hearing impairments (LTA, 2021). According to LTA (2020; n.d.-f), the MAVIS (Mobility Assistance for the Visually Impaired and Special Users) application, which provides real-time alerts to bus captains to assist commuters with special needs, was also trialled since 2018 (Figure 6).

The training programme has also evolved in tandem with the introduction of mixed-reality simulators at the SBS Transit Public Bus Captain Training and Certification Centre. These simulators provide hands-on scenario-based learning, tracking eye movements and gestures to prepare bus captains for real-life interactions with commuters who have special needs (Loi, 2024).

Needless to say, as commuter needs continue to evolve, the sector must proactively refine its training programmes and adopt best practices to ensure that bus captains can adapt their skillsets to deliver inclusive, responsive, and high-quality service to Singapore's diverse passenger base.

Figure 4

Graphic of a Bus Captain Helping a Passenger in a Wheelchair Up the Manual Ramp

Note. From An Inclusive Public Transport System [Graphic], by Land Transport Authority, n.d.-e.

Figure 5

Image of Three-Door Double-Decker Diesel Buses

Note. From Charging Up the Singapore Bus Scene: History of Buses [Photograph], by Land Transport Authority, 2023.

Figure 6

Driver Display Unit with MAVIS Mobile Application

MAVIS = Mobility Assistance for the Visually Impaired and Special Users.

Note. From Enabling Masterplan 2030: Promoting Independent Living for Persons with Disabilities [Photograph], by SG Enable, 2022.

Embracing Technological Innovation and Automation

Public bus driving has also evolved into a skilled profession that demands more than safe driving and route memorisation. Bus captains now require advanced technological skills, with innovations such as the Mobileye Collision Avoidance System, which had been installed in over 3,000 buses by 2018. This system notifies bus captains of nearby vehicles, pedestrians, and cyclists through visual and audio alerts, reducing accident risks (Lim, 2016; SBS Transit, n.d.-e) (see Figure 7). A 2014 trial demonstrated that bus captains who underwent training on the system exhibited improved driving behaviour, reinforcing the importance of technology-integrated driver education (Lim, 2016).

Building on Mobileye, SBS Transit, and ST Engineering have launched a 6-month trial of AGIL DriveSafe+ in 2024, Singapore's first 360° collision warning system tested on buses (T. Ng, 2024). The system uses AI-powered cameras to detect blind-spot hazards and provide real-time alerts for pedestrians, cyclists, and vehicles, while its AI-driven hazard differentiation minimises false alarms, improving driver responses and reducing distractions (T. Ng, 2024).

As buses become increasingly smart with new technologies, it is essential for bus captains to keep pace with evolving operational demands, which require training in advanced vehicle monitoring and automated safety systems.

Figure 7

Image of Mobileye 560 Installed on a Public Bus

Note. From Image of Mobileye 560 Installed on a Public Bus [Photograph], by Suhaila, 2023 (own photo).

At the same time, advanced technology has also been leveraged to enhance training programmes, as demonstrated by the BC Drive Safe refresher course, launched in 2022, which had trained over 4,000 bus captains by end-2024 (Chelvan, 2025a; Ong, 2025). This course, which reinforces the importance of safe driving, uses simulator-based exercises and case study discussions to build hazard awareness and emergency response capabilities. With plans to extend the training to all 9,500 bus captains (Chelvan, 2025a), this initiative underscores the sector's commitment to workforce development and commuter safety, ensuring that bus captains remain equipped to navigate evolving transport technologies and maintain high safety standards.

As autonomous technology continues to advance, the focus on autonomous or self-driving buses has also grown, with ST Engineering leading the trials since 2015. The prospective deployment of such vehicles initially brewed concerns over its potential impact on displacing public bus driving jobs (NTUC, 2016). However, as seen in other transport sectors—such as Singapore's fully automated MRT lines—automation does not necessarily eliminate jobs but reshapes workforce needs, stressing the importance of redesigning job roles to coexist with automation (Yong, 2017).

Recognising the need for workforce preparedness, LTA and eight industry stakeholders signed a Memorandum of Understanding in 2019, committing to upskilling bus captains for their evolving roles (LTA, 2019; Toh, 2019). That same year, around 100 bus captains underwent specialised training to handle such vehicles, marking the introduction of a new role: the safety operator—tasked with monitoring autonomous buses and taking immediate manual control when necessary to ensure safe operations and public safety (LTA, 2019; Toh, 2019).

In early 2025, the government announced a pilot deployment of autonomous public buses, operating alongside existing fleets, with a full-scale roll-out scheduled for mid-2026 (Chelvan, 2025b). During the initial phase, bus captains will serve as safety operators, where their presence will enhance public confidence in the technology, ensuring a smooth adoption process while maintaining high safety standards. This shift underscores the continued relevance and ever-evolving role of bus captains, who remain essential in delivering safe, sustainable, and inclusive services to meet the dynamic needs of commuters.

As Singapore advances towards a smarter transport network and the deployment of autonomous buses becomes increasingly imminent (Chelvan, 2025b; Kow, 2023), the industry must proactively prepare for potential workforce transitions, particularly for bus captains whose responsibilities will evolve alongside technological advancements. Collaborations between the

government, unions, and training institutions will be critical in developing the necessary new competencies and ensuring a just transition for the sector's workforce.

Conclusion

The evolution of Singapore's public bus industry illustrates the complex interplay between human labour, technological progress, policy reform, and workforce empowerment. From the early days of labour unrest to the present-day digital transformation, the sector's development has been shaped by the perseverance and dedication of its workforce. Bus captains have consistently adapted to changing demands, including industry reforms such as the BCM and the PWM, which are driven by tripartite efforts to ensure that public transportation continues to meet the ever-evolving needs of commuters.

Even with the shift towards innovation and automation through the planned deployment of autonomous public buses, bus captains remain integral to Singapore's public transportation system—whether in their traditional role or in the evolved role of safety operators managing AI-assisted fleets. Thus, it is vital to ensure that the industry has enough skilled bus captains to ensure the functioning of public transportation as an essential service. Reflecting on career progression pathways and macrotrends in the transportation sector, it will be critical to address the following in the coming years:

1. Local workforce shortage: Ensuring competitive wages under the PWM frameworks and creating clear career progression pathways to attract and retain local talent.
2. High attrition rates: Ensuring continued professionalisation and appreciation of the role through structured training programmes, upskilling courses, and continuous learning opportunities in collaboration with SGBA to enhance job satisfaction and retention.
3. Aging workforce: Offering reskilling programmes and flexible work arrangements to cater to the changing lifestyles and preferences of the workforce while also attracting younger bus captains.

By prioritising workforce development, equitable labour practices, and technological advancements, Singapore can solidify its position as a global leader in public transportation. A future-ready transport industry hinges not only on smart systems and cutting-edge technology but also on the sustained collaboration by tripartite partners to maintain a well-trained, adaptable workforce that sets new standards in service excellence, sustainability, and urban mobility.

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REFERENCES

Abdullah, Z. (2017, July 25). With better pay, more Singaporeans becoming bus drivers. *The New Paper*.

Baktee, F. (2017, July 24). *Bus captains: More needed by 2022*. NTUC. https://www.ntuc.org.sg/uportal/news/Bus-Captains-More-Needed-by-2022/

Chee, H. T. (2024, March 5). *Speech by Minister for Transport, Mr Chee Hong Tat, at the Ministry of Transport Committee of Supply Debate* [speech transcript]. Ministry of Transport. https://www.mot.gov.sg/news/in-parliament/Details/speech-by-minister-for-transport-mr-chee-hong-tat-at-the-ministry-of-transport-committee-of-supply-debate

Chelvan, V. P. (2025a, February 12). 4 in 10 bus drivers in Singapore have completed safe driving refresher course, with rest to follow. *The Straits Times*. https://www.straitstimes.com/singapore/transport/4-in-10-bus-drivers-in-singapore-have-completed-safe-driving-refresher-course-with-rest-to-follow

Chelvan, V. P. (2025b, February 20). Self-driving public buses to be tested from mid-2026 on service 191 and 400 as part of trial. *The Straits Times*. https://www.straitstimes.com/singapore/transport/self-driving-buses-to-be-tested-from-mid-2026-on-public-bus-routes-around-marina-bay-one-north

Choo, F. (2016, October 17*).* Bus Academy to provide standardised training for new public bus drivers launched. *The Straits Times*. https://www.straitstimes.com/singapore/transport/standardised-training-for-new-bus-captains-launched

Employment and Employability Institute. (n.d.). *Public bus (Singapore Bus Academy)*. https://www.e2i.com.sg/industry-info/trade-connectivity/public-bus

Fang, J. (2014, June 14). Overwhelming interest in bus driver positions in London. *Today*. https://www.todayonline.com/singapore/overwhelming-interest-bus-driver-positions-london

Fwa, T. F. (Ed.). (2016). *50 years of transportation in Singapore: Achievements and challenges*. World Scientific. https://doi.org/10.1142/9477

Government of Singapore. (2020, February 24). *Keeping Singapore moving* [article].

Ho, T. (2023). The growing scope and impact of the progressive wage model. *Singapore Labour Journal*, *2*(1), 56–67. https://doi.org/10.1142/S2811031523000153

Kok, Y. (2021, June 19). More S'pore residents take trains and buses to work, fewer drive to the office: Population census. *The Straits Times*. https://www.straitstimes.com/singapore/more-spore-residents-take-trains-and-buses-to-work-fewer-drive-to-the-office-population

Kok, Y. (2022, February 15). SBS transit to equip technicians with basic knowledge of hybrid, electric bus systems. *The Straits Times*. https://www.straitstimes.com/singapore/sbs-transit-to-equip-technicians-with-basic-knowledge-of-hybrid-electric-bus-systems

Kow, B. (2023, February 24). LTA, EDB to push on with autonomous vehicle development despite ST Engineering's withdrawal from bus trials. *The Business Times*. https://www.businesstimes.com.sg/singapore/lta-edb-push-autonomous-vehicle-development-despite-st-engineerings-withdrawal-bus-trials

Land Transport Authority. (n.d.-a). *Public transport ridership yearly 2015-2024*. https://www.lta.gov.sg/content/dam/ltagov/who_we_are/statistics_and_publications/statistics/pdf/PT_Ridership_Yearly_2015-2024.pdf

Land Transport Authority. (n.d.-b). *The LTA story*. https://www.lta.gov.sg/content/ltagov/en/who_we_are/our_organisation/the_lta_story.html

Land Transport Authority. (n.d.-c). *Bus contracting model*. https://www.lta.gov.sg/content/ltagov/en/who_we_are/our_work/public_transport_system/bus/bus_contracting_model.html

Land Transport Authority. (n.d.-d). *Singapore Bus Academy*. https://www.lta.gov.sg/content/ltagov/en/industry_innovations/industry_transformation_map/academies/singapore_bus_academy.html

Land Transport Authority. (n.d.-e). *An inclusive public transport system*. https://www.lta.gov.sg/content/ltagov/en/getting_around/public_transport/a_better_public_transport_experience/an_inclusive_public_transport_system.html

Land Transport Authority. (n.d.-f). *Annex: Mobility Assistance for the Visually Impaired and Special Users (MAVIS)*. https://www.lta.gov.sg/content/dam/ltagov/news/press/2019/20190130_MAVIS_mobileapp_Annex.pdf

Land Transport Authority. (2017, September 4). *Bus services continue to improve since transition to BCM* [press release].

Land Transport Authority. (2019, October 24). *Equipping public bus drivers for future roles* [press release]. https://www.lta.gov.sg/content/ltagov/en/newsroom/2019/10/1/Equipping_publi_bus_captains.html

Land Transport Authority. (2020, March 5). *Factsheet: Assistive technologies to help bus commuters with special needs* [press release]. https://www.lta.gov.sg/content/ltagov/en/newsroom/2020/3/news-releases/assistive-technologies-to-help-bus-commuters-with-special-needs.html

Land Transport Authority. (2021, January 11). *LTA to deploy three-door double-deck buses from 2021* [press release]. https://www.lta.gov.sg/content/ltagov/en/newsroom/2021/1/news-releases/LTA_to_deploy_three_door_double_deck_buses.html

Land Transport Authority. (2023, April 28). *Charging up the Singapore bus scene*. https://www.lta.gov.sg/content/ltagov/en/who_we_are/statistics_and_publications/Connect/historyofbuses.html

Lee, M. (2017, October 5). *The road to nationalisation: Public buses in Singapore*. BiblioAsia, National Library Board, Singapore. https://biblioasia.nlb.gov.sg/vol-13/issue-3/oct-dec-2017/roadtonationalisation/#fn:2

Lee, N. T. (2025, February 1). MRT, LRT ridership surpasses pre-Covid-19 levels for first time in 2024. *The Straits Times*. https://www.straitstimes.com/singapore/transport/mrt-lrt-ridership-surpasses-pre-covid-19-levels-for-first-time-in-2024

Lim, A. (2016, May 6). SBS buses go high-tech to look out for road users. *The Straits Times*. https://www.straitstimes.com/singapore/transport/sbs-buses-go-high-tech-to-look-out-for-road-users

Loi, E. (2024, September 24). Bus drivers use mixed-reality simulator to learn how to help passengers with different needs. *The Straits Times*. https://www.straitstimes.com/singapore/bus-drivers-use-mixed-reality-simulator-to-learn-how-to-help-passengers-with-different-needs

Menon, G. (2016). *Singapore chronicles: Transport*. Straits Times Press. https://www.stbooks.sg/products/singapore-chronicles-transport

Menon, G., & Loh, C. K. (2006). *Lessons from bus operations*. Public Transport Council. https://www.ptc.gov.sg/docs/default-source/publications-and-papers/lessonsfrombusoperationsrev5.pdf

National Trades Union Congress. (2016, May 20). *Future-readying bus workers* [news release]. https://www.ntuc.org.sg/uportal/news/Future-Readying-Bus-Workers/

Ng, H. (2017, May 11). How long is Singapore's shortest bus route? *The Straits Times*.

Ng, T. (2024, May 25). 'Extra pair of eyes': 360-degree collision warning system helps bus drivers check blind spots. *The Straits Times*. https://www.straitstimes.com/singapore/extra-pair-of-eyes-360-degree-collision-warning-system-helps-bus-drivers-check-blind-spots

Ong, J. (2025, February 12). Refresher programmes, full-cabin simulators among ways public bus drivers learn to keep safe. *CNA*. https://www.channelnewsasia.com/singapore/bus-driver-safety-training-smrt-sbs-go-ahead-tower-transit-4930296

SBS Transit. (n.d.-a). *Milestones*. https://www.sbstransit.com.sg/milestones

SBS Transit. (n.d.-b). *SBS Transit public bus drivers to get higher pay, new and enhanced incentives and benefits*. https://www.sbstransit.com.sg/news/sbs-transit-bus-captains-to-get-higher-pay-new-and-enhanced-incentives-and-benefits

SBS Transit. (n.d.-c). *Green efforts*. https://www.sbstransit.com.sg/green-efforts

SBS Transit. (n.d.-d). *Special assistance*. https://www.sbstransit.com.sg/special-assistance

SBS Transit. (n.d.-e). *SBS Transit continues to invest in technology to increase public bus captains competency* [news release]. https://www.sbstransit.com.sg/news/sbs-transit-continues-to-invest-in-technology-to-increase-bus-captains-competency

SBS Transit. (2019). *Annual sustainability report*. https://www.sbstransit.com.sg/Uploads/Investor_Relations/Annual_Report/2019/28-35SustainabilityReport.pdf

SG Enable. (2022). *Enabling masterplan 2030: Promoting independent living for persons with disabilities*. https://www.sgenable.sg/news-insights/EMP2030-Independent-Living-PWDs

Sim, R. (2013, November 8). SMRT bus drivers could earn $1,000 more a month. *The Straits Times*.

SkillsFuture Singapore. (2016, May 6). *Launch of the sectoral manpower plan for the public bus industry*. https://www.ssg.gov.sg/newsroom/launch-of-the-sectoral-manpower-plan-for-the-public-bus-industry

Tan, C. (2016, January 19). 102 SMRT bus drivers protest against pay. *The Straits Times*.

Taplin, E. (2012). The Liverpool General Transport Strike, 1911. *Historical Studies in Industrial Relations*, *33*, 25–38. https://doi.org/10.3828/hsir.2012.33.3

Teo, E. (2019). *Jalan Singapura: 700 years of movement in Singapore*. Marshall Cavendish Editions. https://www.historybyeisen.com/jalan-singapura

Thornton, J. M. III. (2014). Challenge and Response in the Montgomery Bus Boycott of 1955–1956. *Alabama Review*, 67(1), 40–112. https://doi.org/10.1353/ala.2014.0000

Today. (2014, May 21). *Public bus industry revamp: Govt to own all bus operating assets, contract out bus services*. https://www.todayonline.com/singapore/govt-own-all-bus-operating-assets-contract-out-bus-services

Toh, T. W. (2019, October 24). Public bus drivers to be trained to handle autonomous buses. *The Straits Times*. https://www.straitstimes.com/singapore/transport/public-bus-drivers-to-be-trained-to-handle-autonomous-buses

Tower Transit Singapore. (2020, September 30). *Tower Transit Singapore awarded contract for Bulim and Sembawang-Yishun packages of bus services*. https://www.towertransit.sg/media/tower-transit-singapore-awarded-contract-for-bulim-and-sembawang-yishun-packages-of-bus-services

Yong, M. (2017, October 10). Melvin Yong: Hey, no one is driving our bus! [blog post]. *National Trades Union Congress*. https://www.ntuc.org.sg/uportal/news/Blog-Post-Melvin-Yong-Hey-no-one-is-driving-our-bus/

Empowering the Workforce Through the NTUC Job Security Council: Current Progress and Future Directions

Shawn Seah

Abstract

The National Trades Union Congress Job Security Council (NTUC JSC) was launched in February 2020 to enhance job matching for workers, minimise the impact of retrenchments, and support companies in their workforce and business transformation, enabling workers in these companies to enjoy better wages and career development. Managed by NTUC's Employment and Employability Institute (e2i), the NTUC JSC has been supporting at-risk or displaced workers with career coaching, skills evaluation, training, job-search assistance, and job-matching services. It is timely to review the NTUC JSC. The paper reviews the NTUC JSC's progress, compares it with similar organisations in Sweden, and provides a glimpse into the future. Since its launch, the NTUC JSC has expanded its ecosystem to over 10,000 companies and 27 career and job services touchpoints in 2024, placing over 110,000 workers between February 2020 and December 2024. Beyond just placing more workers, the NTUC JSC has placed more Professionals, Managers, and Executives (PMEs) including skilled Technicians, increasing from 8,800 to 17,000 between 2023 and 2024. However, while having been successful in placing jobseekers, the NTUC JSC will need to further strengthen job-matching processes and explore working more closely with partners like the Singapore National Employers Federation (SNEF), to better manage the flow of labour within the economy due to retrenchment. Looking ahead, the ecosystem can be strengthened with technology and consolidate resources to support job redesign and business transformation; skills upgrading; and placement and progression.

Introduction

The National Trades Union Congress Job Security Council (NTUC JSC), an initiative of the NTUC in collaboration with the Singapore National Employers Federation (SNEF), was first introduced by Secretary-General Mr Ng Chee Meng in February 2020. Its aim was to enhance job matching for workers, minimise the impact of retrenchments by reducing unemployment periods, and support companies in their workforce and business transformation to enable workers in these companies to enjoy better wages and career development. It also aimed to support businesses in their economic cycles to cope with fluctuating manpower needs and enable sharing of industry insights and best practices.

The NTUC JSC is set to play a critical role in the current environment, where technology is advancing at a rapid pace. Today, an increasing number of companies are tapping into or have plans to tap into technology to improve productivity and profitability. Workers whose skills have become obsolete or who lack the necessary skills to navigate the ever-changing environment are at risk of losing their jobs and may have difficulties finding new jobs.

NTUC's Employment and Employability Institute (e2i) has served as the ecosystem manager of the NTUC JSC network of receiving companies (i.e. companies that are employing) and releasing companies (i.e. companies that are releasing workers) that is built on trust by gathering information on job vacancies and jobs that are phasing out in advance and moving upstream to provide help to companies and workers (Employment and Employability Institute, 2022).

The NTUC JSC has provided transition support to at-risk or displaced workers with career coaching, skills evaluation, access to training, job-search assistance, and job-matching services to improve their employment prospects and match them into new jobs.

Within the NTUC JSC ecosystem, workers could receive various forms of support, including through NTUC-Education and Training Fund to subsidise their skills upgrading and reskilling. Workers could also benefit from training courses and programmes. Companies could tap into NTUC's Operation & Technology Roadmapping to support workforce and business transformation, allowing them to visualise how their business can grow and jobs can be redesigned, with financial support from the NTUC Company Training Committee (CTC) Grant, to benefit both workers and companies.

The paper aims to briefly review the progress of the NTUC JSC, compare it with a similar organisation in Sweden, and provide a glimpse into what the future holds for the NTUC JSC.

Methodology

To develop this paper, NTUC's e2i's Planning, Strategy, and Data Analysis (PSDA) team reviewed internal jobseeker placement data and trade union density and collective bargaining rates from the Organisation for Economic Cooperation and Development to unravel trends and develop insights. PSDA team also reviewed the literature that was publicly available.

Progress of the National Trades Union Congress Job Security Council

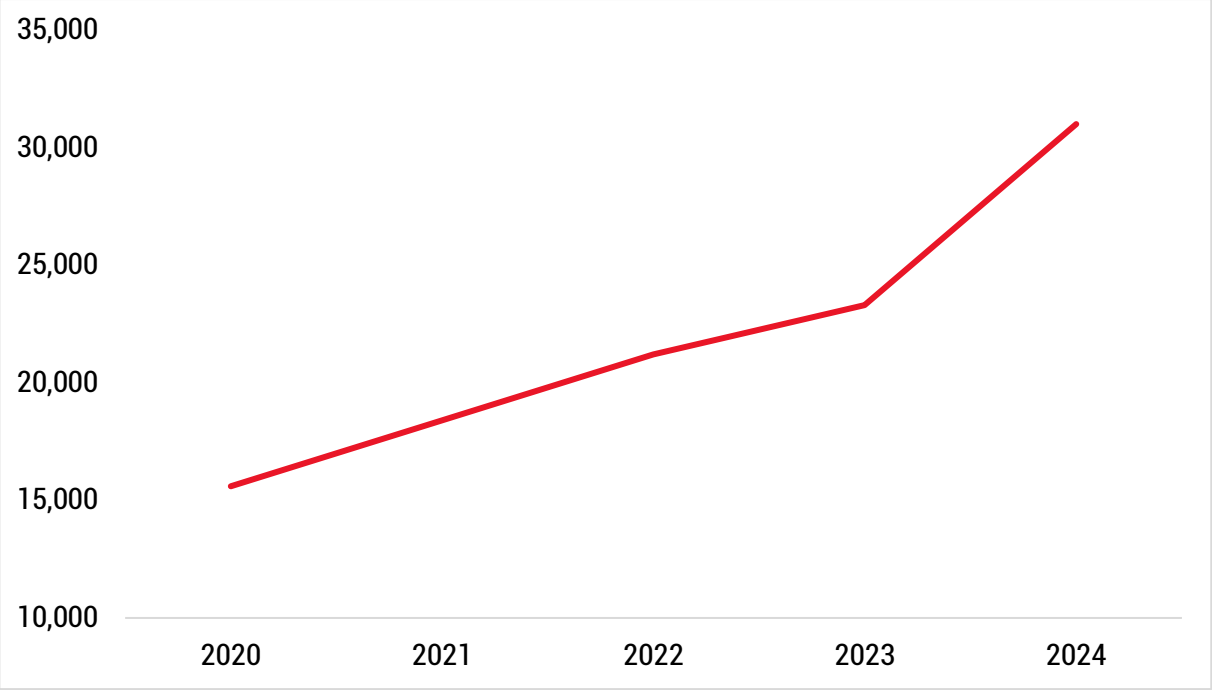
The NTUC JSC has seen significant progress since its launch in February 2020. Over the years, the NTUC JSC, powered by NTUC's e2i, has expanded from two career centres, one located in the west and the other in central Singapore, to 27 career and job services touchpoints island-wide since 2024. The number of companies within the NTUC JSC ecosystem had also greatly increased from approximately 4,000 at the beginning to more than 10,000 (Lai, 2021).

Over 110,000 workers have been placed by the NTUC JSC and the number of placements has risen steadily over the past years (refer to Figure 1), even during and well after the COVID-19 pandemic. In fact, during the pandemic, the NTUC JSC facilitated the mass movement of workers from companies that faced a decline in business (e.g. in tourism) to the ones that needed to quickly ramp up operations (e.g. in healthcare) through "Lift and Place" (Sofiah, 2022). Since 2024, jobseekers can step forward to any of NTUC's e2i's 27 career and job services touchpoints to seek job opportunities.

Beyond simply placing more workers, the NTUC JSC has placed more Professionals, Managers, and Executives including skilled Technicians, increasing from 8,800 to 17,000 between 2023 and 2024.

Figure 1

Number of Workers Placed by the NTUC JSC



Note. The NTUC JSC's placement figures (rounded to nearest 100).

Comparison Between the National Trades Union Congress Job Security Council and Swedish Job Security Council Models

The NTUC JSC was inspired by the JSCs in Sweden (i.e. Swedish JSCs) which offered services, including job matching, career coaching, retrenchment support, and transition services like vocational training programmes, to at-risk workers. This section of the paper briefly compares the NTUC JSC against the Swedish JSCs and identifies key differences and similarities.

There are several Swedish JSCs, each for a different sector. For instance, Trygghetsrådet is the JSC for private sector employees and Trygghetsstiftelsen is the JSC for public sector employees. Swedish JSCs are privately funded by the organisations or companies that employ the workers. Thus, Swedish JSCs have the necessary financial resources that public employment services may not provide. Further, since the companies are funding the JSCs, they engage affected workers early in their retrenchment exercises. As a result, Swedish JSCs can provide an early retrenchment support system and improve the placement success of retrenched workers (Trade Union Advisory Committee, 2018).

Broadly, Swedish JSCs are bipartite, nonprofit organisations established by Collective Agreements (CAs) negotiated between social partners, namely unions and employers. The terms of the CAs require releasing companies to not only inform their affected workers in advance but also tailor support to their specific needs, and workers receive support even while they are still employed by the company (OECD, 2017). In addition, CAs cover both members and nonmembers at workplaces with agreements (Kjellberg, 2023). Singapore's concept is not based on CAs, unlike Swedish JSCs that have companies' support because they are linked to CAs, where companies will need to engage JSCs' services.

As of 2019, nine out of 10 active clients of Swedish JSCs found a new job, entered studies, or became self-employed within seven months. Among them, 7% started their own businesses and 68% were offered an equal or higher salary (Eurofound, 2022). This finding is similar to what Trygghetsrådet reported: Swedish JSCs have been successful with 65% of workers receiving higher or the same salary as in their previous position (Trygghetsrådet, 2024).

Despite a general trend of declining trade union density (Kjellberg, 2023; OECD, 2022, 2024), Sweden still enjoyed a high union density of 70% in 2021, among the highest in the world, where 70% of employees were union members and 90% of employees were covered by CAs (Kjellberg, 2023; OECD, 2022). State-supported union unemployment funds boost the attractiveness of union membership, as workers who join unions receive better unemployment insurance (Kjellberg, 2019). The relatively high collective bargaining coverage and placement rates suggest that tying CAs to JSCs is an effective way for empowering the JSC and contributing to its success in Sweden.

However, Singapore's social compact based on tripartism as well as lower unionisation levels differ from Sweden's bipartite JSCs and higher unionisation levels. As such, not every insight from Swedish JSC can be directly implemented in Singapore. Accordingly, the NTUC JSC that sits within the broader framework of Singapore's tripartism has been more appropriate for the country's unique context.

The Next Bound of the National Trades Union Congress Job Security Council

The past few years have provided valuable learning points for the NTUC JSC. On the workers' end, while the NTUC JSC has been successful in placing at-risk workers, in the initial stages, job matching involved a hands-on approach that required extensive time and effort by career coaches. Looking to the future, more technology would go a long way towards enhancing the work of career coaches as well as allowing jobseekers to self-service. On the companies' end, there was understandably a preference to adopt a more cautious approach regarding sharing sensitive early information on retrenchments with NTUC. Further, receiving companies preferred recruiting only skilled workers to quickly meet business needs. The number of deeply engaged companies within the NTUC JSC's ecosystem was limited but there appears to be potential to increase it over time, including greater engagement with small and medium enterprises, as the total number of local and foreign companies registered in Singapore is around 440,000 (ACRA, 2024).

Looking ahead, the NTUC JSC could explore enhancing its ecosystem of support to workers and companies by serving as a one-stop solution. As part of NTUC's commitment to supporting Singapore's social compact, the NTUC JSC will better livelihoods through strengthening three pillars: (a) redesigning jobs for better wages, welfare, and work prospects, and working with companies on their business transformation; (b) strengthening skills upgrading; and (c) continuing with our efforts in placement and progression.

On the first pillar, the next bound of the NTUC JSC should support more job redesign efforts through business transformation, with the aim of creating better jobs for workers, with better wages, welfare, and work prospects. The additional funding of around $200 million in Singapore dollars set aside by the government for the NTUC CTC Grant is a step in the right direction and would go a long way towards supporting business transformation (Ministry of Finance, 2025). At the same time, workers would potentially benefit not just from real wage increases, structured career pathways through Career Development Plans, and skills allowances, but also from the expansion of the Grant to support employer-led training leading to formal qualifications or certifications (Ministry of Finance, 2025).

On the second pillar, beyond offering new Career Conversion Programmes to midcareer switchers to reskill and move into new occupations or sectors with good prospects and opportunities for progression in emerging areas like sustainability, the NTUC JSC should continue to leverage partnerships with strong Continuing Education and Training Centres including NTUC LearningHub in the area of skills upgrading and training development.

On the third pillar, workers can continue to receive a range of assistance related to job security at a single touchpoint, including career transition, mentoring, executive coaching, or training. Going forward, the NTUC JSC will harness technology such as generative-artificial intelligence (AI)-enabled Virtual Career Coach to boost the productivity of career coaches and could develop tools such as chat functions, a resume builder, and even an AI mock interview tool that jobseekers could access easily.

All of these efforts could be enhanced by closer collaboration with strategic partners such as SNEF, as employers play an important role in the various pillars. With more employer partners on board an enhanced NTUC JSC, more possibilities could be opened up, and more pilot programmes with SNEF member companies could be explored. For example, for some employers, SNEF could work with the NTUC JSC to test out a model where it proactively plans with the management on job facilitation of workers identified for retrenchment. Such pilots would engender trust and help to bring more employers on board so that the NTUC JSC can intervene earlier to support retrenched workers.

Another strategic partner would be the government. The next bound of the NTUC JSC could be enhanced by working even more closely with the Ministry of Manpower and relevant government agencies, including economic agencies like the Economic Development Board and Enterprise Singapore. By being aware of new jobs in new sectors and investments coming into Singapore, this would help better inform workforce requirements and ensure that the NTUC JSC can be better prepared to support jobseekers to be ready for these new growth opportunities. By working hand in hand with employers and government agencies, the NTUC JSC will be able to continue improving wages, welfare, and work prospects for Singaporeans.

Conclusion

In conclusion, the NTUC JSC has made significant strides since its inception in February 2020. By enhancing job matching and minimising the impact of retrenchment on workers, the NTUC JSC has been successful, placing over 110,000 workers, with more Professionals, Managers, and Executives and skilled Technicians placed over time, and expanding its ecosystem to include over 10,000 companies and 27 career and job services touchpoints. Building on these achievements, there are opportunities for further enhancement, such as streamlining job-matching processes and launching a pilot with a few employers to proactively work with them on redeploying workers identified for retrenchment.

Looking forward, NTUC could strengthen its support ecosystem by serving as a one-stop solution for job redesign through business transformation; skills upgrading; and placement and progression. Through a greater emphasis on job redesign through business transformation, supported by the NTUC CTC Grant, more companies and workers will benefit from the NTUC JSC. Career Conversion Programmes administered by the NTUC JSC can continue to benefit midcareer switchers. The introduction of relevant and useful technologies, such as generative-AI-enabled Virtual Career Coach, will further enhance the productivity of NTUC's e2i's career coaches and provide jobseekers with accessible tools like chat functions, resume builders, and AI mock interview tools. Underpinning all of these efforts is the strength and partnership spirit of tripartism in Singapore, as the NTUC JSC collaborates closely and constructively with employers as well as the government. Collectively through these initiatives and more in time to come, NTUC will continue to promote industrial peace, provide better jobs, and ultimately improve the livelihoods of Singaporeans.

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REFERENCES

ACRA. (2024, November). *2024 Statistical highlights: Monthly business entity count*. Government of Singapore. https://www.acra.gov.sg/training-and-resources/facts-and-figures/business-registry-statistics

Employment and Employability Institute. (2022). *Job Security Council jobs alert in Singapore*. https://www.e2i.com.sg/job-security-council-jsc/

Eurofound. (2022, November). *Job security councils, measure SE-1974-43/2484 (measures in Sweden)*. EU PolicyWatch. https://static.eurofound.europa.eu/covid19db/cases/SE-1974-43_2484.html

Kjellberg, A. (2019). Sweden: collective bargaining under the industry norm. In *Collective bargaining in Europe: Towards an endgame* (Vol. 3, pp. 583–603). European Trade Union Institute (ETUI). https://www.etui.org/sites/default/files/CB%20Vol%20III%20Chapter%2028.pdf

Kjellberg, A. (2023). Trade unions in Sweden: Still high union density, but widening gaps by social category and national origin. In J. Waddington, T. Müller, & K. Vandaele (Eds.), *Trade unions in the European Union: Picking up the pieces of the neoliberal challenge* (Vol. 86, pp. 1051–1092). Peter Lang Publishing Group. https://www.etui.org/sites/default/files/2023-06/Chapter28_Sweden_still%20high%20union%20density%2C%20but%20widening%20gaps%20by%20social%20category%20and%20national%20origin_2023.pdf

Lai, L. (2021, August 5). More than 32,000 workers matched to new jobs by NTUC's Job Security Council. *The Straits Times*. https://www.straitstimes.com/singapore/jobs/more-than-32000-workers-matched-to-new-jobs-by-ntucs-job-security-council

Ministry of Finance. (2025, February). *Budget 2025 speech: Onward together for a better tomorrow*. https://www.mof.gov.sg/docs/librariesprovider3/budget2025/download/pdf/fy2025_budget_statement.pdf

OECD. (2017). *OECD Employment Outlook 2017*. OECD Publishing. https://doi.org/10.1787/empl_outlook-2017-en

OECD. (2022). *Trade Unions: Collective bargaining coverage (Edition 2021)* [Data set]. OECD Employment and Labour Market Statistics. https://doi.org/10.1787/df40a9e7-en

OECD. (2024). *Trade Unions: Trade union density* [Data set]. OECD Employment and Labour Market Statistics. https://doi.org/10.1787/data-00371-en.

Sofiah, A. (2022, October 18). NTUC's e2i and SNEF sign MoU to drive better wages, work prospects, and welfare for workers. *Human Resources Online*. https://www.humanresourcesonline.net/ntuc-s-e2i-and-snef-sign-mou-to-drive-better-wages-work-prospects-and-welfare-for-workers

Trade Union Advisory Committee. (2018, May 1). *The Swedish Job Security Councils: A case study on social partners' led transitions*. https://tuac.org/news/the-swedish-job-security-councils-a-case-study-on-social-partners-led-transitions/

Trygghetsrådet. (2024). *TRR in numbers*. https://www.trr.se/trr-in-english

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Mr Ng Chee Meng has been the NTUC Secretary-General since May 2018, advocating for workers' wages, welfare, and work prospects. He championed the establishment of the Company Training Committees, fostering stronger collaboration between unions and management to drive business and workforce transformation. He also launched the NTUC Job Security Council to support better careers, better job matching, and a better workforce through upskilling, career guidance, and mentorship, helping workers future-proof their careers and job security. Under his stewardship, NTUC expanded support to different segments of workers, including the youths and local professionals, managers, and executives.

Mr Ng has been elected as Member of Parliament for Jalan Kayu SMC in the General Election 2025. He previously served as Minister in the Prime Minister's Office, Minister for Education (Schools), and Second Minister for Transport. He also had a distinguished 29-year career serving in the Singapore Armed Forces, culminating in his appointment as Singapore's Chief of Defence Force. Mr Ng holds a Bachelor of Science in Electrical Engineering and a Master of Arts in International Relations.

Mr Patrick Tay
Assistant Secretary-General
National Trades Union Congress, Singapore

Mr Patrick Tay is the Assistant Secretary-General of the National Trades Union Congress (NTUC) and Member of Parliament of Pioneer Single Member Constituency (SMC). He is also the Director of NTUC Strategy and Legal. He also co-chaired the PME Taskforce with the Singapore National Employers Federation in 2021. Besides that, he is the Executive Secretary for United Workers of Electronics & Electrical Industries (UWEEI) and is also Deputy Chairperson, REACH Advisory Panel.

Representing workers and the Labour Movement, Mr Patrick Tay is the Supervising Lead for the Labour Movement's Financial and Professional Services Cluster. He also sits on the NTUC Industrial Relations, Membership and Training Councils and is the Chairman of the Ong Teng Cheong Education Trust Fund Management Committee. In addition, he also sits on several government boards, national institutions, and tripartite committees. He is currently co-chair of the Financial Sector Tripartite Committee (FSTC) and the Tripartite Workgroup on Human Capital Capability Development.

Professor Robbie Goh
Provost
Singapore University of Social Sciences, Singapore

Professor Robbie Goh was appointed Provost of the Singapore University of Social Sciences in October 2021. He was formerly with the National University of Singapore, most recently as Dean of the Faculty of Arts and Social Sciences. He has degrees from the National University of Singapore and the University of Chicago. A literature and cultural studies scholar by training, Professor Goh has also published widely in other fields such as religion, urban studies, and film and popular culture. He is a former board member and second vice-president of the Metropolitan YMCA, and has also served as chairman (LCEC Chair) of the Cairnhill Methodist Church, as a member of the Social Service SkillsFuture Tripartite Taskforce, member of the Charity Council, member of the Institute for Adult Learning council, and on other arts advisory and social services committees.

Professor Hoon Hian Teck
Professor of Economics
Singapore Management University, Singapore

Professor Hoon Hian Teck is Professor of Economics at the Singapore Management University. He specialises in macroeconomics, international trade, and economic growth. How Singapore managed to grow without being caught in the middle-income trap and understanding what is needed to generate economic prosperity as a mature economy has occupied his mind in recent years. He is author of *Economic Dynamism, Openness, and Inclusion: How Singapore Can Make the Transition from an Era of Catch-up Growth to Life in a Mature Economy* (2019). He is a past Vice-President of the Economic Society of Singapore (2002–2004) and co-editor of *Singapore Economic Review* (2002–2020).

Mr Alexander C. Melchers
Vice-President
Singapore National Employers Federation, Singapore

Mr Alexander Melchers is Vice-President of Singapore National Employers Federation (SNEF) and Member of the Advisory Council of the Singaporean-German Chamber of Industry and Commerce (SGC). His other current Tripartite appointments include the National Wages Council since 2006 and Director of the Institute for Human Resource Professionals (IHRP); his past appointments include the Chairman of the Tripartite Implementation Workgroup on Employability of Older Workers (Retirement and Re-employment) and Board Member of the Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP).

After vocational training in international trade, he worked in Venezuela before studying at the University of St. Gallen. He worked in brand management with P&G and joined C. Melchers Group of Companies in Singapore in 1997. C. Melchers is a diversified trading, development, and services company established in 1806, headquartered in Bremen, Germany and with offices across Asia. He is married with four children.

Dr Beh Swan Gin
Permanent Secretary
Ministry of Trade & Industry, Singapore

Dr Beh Swan Gin is the Permanent Secretary of the Ministry of Trade and Industry. He was Chairman of the Singapore Economic Development Board (EDB) from December 2014 to April 2023. Prior to joining EDB, he was Permanent Secretary of the Ministry of Law from July 2012 to November 2014 and was Managing Director of the EDB from August 2008 to June 2012. He is a board director for Singapore Exchange Limited and chairs the board of CapitaLand Ascendas REIT Management Ltd.

Dr Beh is a medical doctor by training and graduated from the National University of Singapore. He is also a Sloan Fellow with a Master of Science in Management from Stanford University's Graduate School of Business and completed the Advanced Management Programme at the Harvard Business School.

EDITORIAL BOARD MEMBERS

Ms K. Thanaletchimi
President of National Trades Union Congress, Singapore and
President of Healthcare Services Employees' Union, Singapore

Ms K. Thanaletchimi is the elected President of the National Trades Union Congress (NTUC) Central Committee, and President of the Healthcare Services Employees' Union. A veteran unionist, she was a Nominated Member of Parliament from 2016 to 2018 during which she leveraged her extensive experience in championing workers' interests, with an emphasis on women, family, and healthcare issues. She received the National Day Award (Public Service Medal) in 2019 for her contributions. She also plays an integral role in rallying tripartite stakeholders to advocate for workers' training and job redesign efforts so that our workers can enjoy fulfilling careers in the healthcare sector. At present, she is a member of CPF Board and NTUC Enterprise.

Professor Chew Soon Beng
Senior Associate of Centre for Liberal Arts and Social Sciences
Nanyang Technological University, Singapore

Professor Chew Soon Beng is a Senior Associate at the Centre for Liberal Arts and Social Sciences at Nanyang Technological University (NTU). He is also an adjunct senior fellow at the S. Rajaratnam School of International Studies (RSIS) at NTU. Dr Chew has been Programme Professor at School of Public Affairs at China's University of Science and Technology since 2012. He had been a full professor of Economics at NTU from 1999 to 2018. He received his PhD from the University of Western Ontario, Canada. His recent research publications include "Union Social Responsibility" and "Strategic Collective Bargaining". He is one of three editors of a book entitled *Political, Economic and Social Dimensions of Markets: A Global Insight*, published by World Scientific in 2022.

Dr Gog Soon Joo
Fellow at SUSS–IAL Centre for Skills-First Practices
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Dr Gog Soon Joo is a Fellow at SUSS–IAL Centre for Skills-First Practices at the Singapore University of Social Sciences–Institute for Adult Learning, where she is spearheading Skills-First initiatives. With over two decades of expertise in workforce development, lifelong learning system transformation, and skills policies, Soon Joo has been pivotal in the transformation of Singapore's continuing education and training system. She serves as a council member at the World Economic Forum Global Future Council for Human Capital Development, and as adviser to various university research advisory boards. Her research focuses on examining the institutional dynamics of skills ecosystems, exploring skills-powered organisations, and investigating the longevity economy. She is an alumnus of Nanyang Technological University in Singapore, University College London and Oxford University in the UK, and George Washington University and Singularity University in the US, and HEC-Paris in France.

Associate Professor Ho Kong Weng
Associate Professor of School of Economics
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Associate Professor Ho Kong Weng is Associate Professor of Economics at the Singapore Management University (SMU). His research areas include meritocracy and inequality, career opportunities and subjective well-being, and economic-social issues related to Singapore society. He has served as principal investigator or research advisor to the Ministry of Social and Family Development, National Youth Council, Strategy Group in the Prime Minister's Office, and the National Trades Union Congress. He teaches "Macroeconomics of Income Distribution", and an experiential course "Family and the Society". He has published on topics related to growth, inequality, happiness of youths, and challenges to social mobility in Singapore.

Associate Professor Intan Azura Mokhtar
Associate Professor of Business, Communication and Design Cluster and
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Associate Professor Intan Azura Mokhtar is Director of the Community Leadership and Social Innovation Centre (CLASIC) in the Singapore Institute of Technology. She has more than 20 years of teaching and academic experience, and has taught courses related to social context and innovation, teaching and training, change management, school and community leadership, and educational technology and policies, for Undergraduate and Master's degree programmes as well as executive programmes. Associate Professor Intan has published widely on the above and has more than 80 publications to her name. She also served as an elected Member of Parliament in the 12th and 13th Parliament of Singapore, from 2011 to 2020.

Professor Jack Linchuan Qiu
Chair and Shaw Foundation Professor of Media Technology,
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Nanyang Technological University, Singapore

Professor Jack Linchuan Qiu is the Chair and Shaw Foundation Professor of Media Technology at the Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore. He has published more than 130 research articles and chapters, and 12 books in English and Chinese including *Goodbye iSlave: A Manifesto for Digital Abolition* (University of Illinois P, 2016), *World Factory in the Information Age* (Guangxi Normal UP, 2013), and *Working-Class Network Society* (MIT Press, 2009). Recipient of the C. Edwin Baker Award for the Advancement of Scholarship on Media, Markets and Democracy, he collects workers' voices and conducts case studies in various Asian contexts, while collaborating with Fairwork and Platform Cooperativism Consortium, to promote labour sustainability in digital economies.

EDITORIAL BOARD MEMBERS

Professor Lim Sun Sun
Vice President, Partnerships and Engagement
Singapore Management University, Singapore

Professor Sun Sun Lim is Vice President, Partnerships & Engagement and Lee Kong Chian Professor of Communication and Technology at Singapore Management University. She has extensively researched the social impact of technology, focusing on technology domestication by families, future of work, and AI ethics. She has over 100 academic publications including *Transcendent Parenting: Raising Children in the Digital Age* (Oxford University Press, 2020) and articles in top journals like *Nature* and *Big Data & Society*. From 2018 to 2020, she was a Nominated Member of the 13th Parliament of Singapore. She won the inaugural Top 50 Asia Women Tech Leaders Award 2024 and is a Fellow of the International Communication Association and the Singapore Computer Society. She writes a monthly technology column in *The Straits Times*.

Dr Mathew Mathews
Head of IPS Social Lab, Principal Research Fellow
Institute of Policy Studies, Lee Kuan Yew School of Public Policy
National University of Singapore, Singapore

Dr Mathew Mathews is Head of IPS Social Lab, a centre for social indicator research and a Principal Research Fellow at the Institute of Policy Studies, Lee Kuan Yew School of Public Policy at the National University of Singapore. To date, Dr Mathews has led over 60 research projects, most of them addressing social policy and social inclusion issues. He uses a range of methodologies in his research endeavours including longitudinal panels, eye-tracking studies and ethnographies.

Dr Mathews' research on work includes studies on low-income workers, retraining efforts, work-life harmony, and in the last few years, platform workers and their protection. He is also an advocate for inclusive workplaces. Together with his colleagues at the IPS Programme of Race, Religion and Intergroup Cohesion, he researches and conducts workshops to increase awareness of diversity and inclusion issues. Dr Mathews sits on various committees and boards in the government and the people sector.

Mr Mike Thiruman
General Secretary
Singapore Teachers' Union, Singapore

Mr Mike Thiruman is a member of the NTUC Central Committee and the General Secretary of the Singapore Teachers' Union (STU). Active in the National Trades Union Congress since 2001, he has taken on several roles in various committees and entities such as the Job Re-creation Tripartite Workgroup Committee (2005 – 2011), NTUC Club, Public Sector Industrial Relations Committee, Membership Committee, Public Sector Cluster, International Relations Committee, International Relations Council, and more. Mr Thiruman is also currently the NTUC EDS Cluster Chairman and Public Service Cluster Co-Chairman.

Associate Professor Randolph Tan
Director of Node for Impactful Continuing Education
Singapore University of Social Sciences, Singapore

Associate Professor Randolph Tan currently serves as the Director of the Node for Impactful Continuing Education at the Singapore University of Social Sciences (SUSS). His research interest lies in applied labour market research, changing demands in skills, and the acquisition of in-demand skills to facilitate workers' transition to adjacent higher-skilled roles. Associate Professor Tan has conducted analysis on the changing profile of the labour market and has expressed his views on the Singapore Government's Budget on productivity, CPF, and the employment credit scheme.

Research Assistant Professor Samuel Chng
Research Assistant Professor and Head of Urban Psychology Lab
Lee Kuan Yew Centre for Innovative Cities
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Research Assistant Professor Samuel Chng heads the Urban Psychology Lab in the Lee Kuan Yew Centre for Innovative Cities at the Singapore University of Technology and Design. With the majority of the world's population residing in cities today, fostering urban lifestyles that contribute towards creating low-carbon, resilient, healthy, and equitable cities becomes ever more critical. An applied social psychologist, his interdisciplinary work focuses on developing research-informed policies and initiatives to accelerate this transition in Singapore and the wider Asian region. He is a firm believer in translating academic research and capacity building, and so actively collaborates with partners in government, industry, the labour movement, and media in this endeavour.

Dr Yang Silin
Deputy Director, Centre for Skills-First Practices
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As Deputy Director (Centre for Skills-First Practices) at the Institute for Adult Learning, Dr Silin Yang develops cutting-edge analytical methods to provide insights into skills demand, supply, gaps, and practices. She also leads transformational projects on human capital development and skills utilisation through partnerships with stakeholders. Dr Silin holds a Doctor of Philosophy and has 20 years of experience in the education sector. Her current research focuses on future human capital and skills-first practices.

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Mr Patrick Tay is Assistant Secretary-General of the National Trades Union Congress (NTUC), an elected NTUC Central Committee member, and Director of NTUC's Legal and Strategy departments. He is an elected Member of Parliament (Pioneer Single Member Constituency). He co-chaired the #EveryWorkerMatters Conversations Project Office and NTUC-SNEF PME Taskforce. He is currently co-chair of the Financial Sector Tripartite Committee and the Tripartite Workgroup on Human Capital Capability Development. Besides that, he is the Executive Secretary for United Workers of Electronics & Electrical Industries (UWEEI) and Deputy Chairperson, REACH Advisory Panel.

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Mr Shawn Seah is the Deputy Director at NTUC Strategy overseeing strategic research studies to identify emerging trends impacting workers and the Labour Movement. He was previously Deputy Director of the Planning, Strategy, and Data Analysis team at NTUC's Employment and Employability Institute. Over his career, he served in the Ministries of Education, Defence, and Manpower, in areas such as corporate and strategic planning, policy formulation, and communications and engagement.

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As Deputy Director (Centre for Skills-First Practices) at the Institute for Adult Learning, Dr Silin Yang develops cutting-edge analytical methods to provide insights into skills demand, supply, gaps, and practices. She also leads transformational projects on human capital development and skills utilisation through partnerships with stakeholders. Dr Silin holds a Doctor of Philosophy and has 20 years of experience in the education sector. Her current research focuses on future human capital and skills-first practices.

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Associate Professor Ho Kong Weng is Associate Professor of Economics at the Singapore Management University (SMU). He has served as principal investigator or research adviser to the Ministry of Social and Family Development, National Youth Council, Strategy Group in the Prime Minister's Office, and the National Trades Union Congress. He has published on topics related to growth, inequality, happiness of youths, and challenges to social mobility in Singapore.

Research Assistant Professor Samuel Chng
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Research Assistant Professor Samuel Chng heads the Urban Psychology Lab in the Lee Kuan Yew Centre for Innovative Cities at the Singapore University of Technology and Design. His interdisciplinary work focuses on developing research-informed policies and initiatives to accelerate the transition to low-carbon, resilient, healthy, and equitable cities. He is a firm believer in translating academic research and capacity building, and so actively collaborates with partners in government, industry, the labour movement, and media in this endeavour.

Associate Editors

Ms Kang Ruihan
Principal Specialist of Strategy
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As a Principal Specialist (Strategy) at the National Trades Union Congress, Ms Ruihan leads strategic research supporting the development of strategies for NTUC. She analyses key issues, including local and regional trends impacting the workforce through collaborations with stakeholders. Her experience and work include analysis on skills and training gaps, underemployment, and the impact of technology on job opportunities.

Mr Hariharan Nair
Senior Specialist of Strategy
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As Senior Specialist (Strategy) at the National Trades Union Congress, Mr Hariharan conducts strategic research on emerging labour trends, translating insights into actionable recommendations. With more than a decade in public sentiment analysis, his current research focuses on understanding the needs and aspirations of workers in SMEs.

Editorial Associate

Ms Cindy Toh
Senior Specialist of Strategy
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Ms Cindy Toh is Senior Specialist of Strategy at the National Trades Union Congress, where she conducts strategic research on labour trends and issues to guide organisational growth and development. Her current research focuses on worker well-being and profiling freelancers and self-employed persons in Singapore.

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