

Trends in Employee Training and Skill Development in Singaporean Companies: A Five-Year Analysis (2018 – 2023)

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Abstract: *This study investigates the evolving trends in employee training and skill development in Singaporean companies from 2018 to 2023, focusing on key areas such as digital skills, leadership, innovation, and employee engagement. Using publicly available annual reports from 12 prominent companies across five industries—Finance, Technology, Healthcare, Manufacturing, and Real Estate—keyword frequency analysis and industry comparisons were conducted to identify patterns in training priorities. The results indicate a notable increase in the emphasis on digital skills and leadership development, particularly within the Finance and Technology sectors, reflecting the broader trend of digital transformation and innovation. While employee engagement showed varying trends, particularly spiking in Healthcare during the pandemic, the focus on innovation remained crucial across all sectors, especially in Manufacturing. The findings suggest that Singaporean companies are adapting their training strategies to meet industry-specific challenges and global trends. The study offers practical recommendations for businesses to prioritize digital skills and leadership training and highlights the need for targeted strategies to enhance employee engagement and innovation.*

Keywords: *Digital Skills, Leadership, Innovation, Employee Engagement, Training*

1. Introduction

In recent years, the global labor market has undergone significant transformations, largely driven by technological advancements, digitalization, and the shift toward knowledge-based economies. As companies increasingly face the pressure to innovate and remain competitive in a rapidly evolving landscape, the development of human capital has become a strategic priority. Employee skills are continuously being upgraded to meet the demands of new technologies and market conditions. This trend is particularly pronounced in countries like Singapore, which is known for its strong emphasis on technological innovation and high labor productivity. The Singaporean government has invested heavily in initiatives such as SkillsFuture, which aims to promote lifelong learning and enhance the workforce's capabilities in emerging sectors, especially in digital skills (Chia et al., 2020).

For businesses in Singapore, employee training and development have become key drivers of organizational success. As companies transition to more digital and automated processes, training programs have shifted towards equipping employees with new competencies in areas such as data analytics, cybersecurity, and innovation management. This shift reflects the broader trend of skills transformation seen across industries globally, where companies are focused on closing the skills gap to adapt to disruptive technologies and changing consumer expectations (Liu, 2019). While large corporations often have the resources to invest in comprehensive training programs, small and

medium-sized enterprises (SMEs) face greater challenges in aligning their training investments with evolving business needs.

The need for continuous skill development has led to increased investments in employee training, but how these investments are structured and their direct impact on organizational outcomes remains unclear. Research has shown that employee training not only improves individual performance but also contributes to organizational growth, profitability, and sustainability (Kaufman, 2021). However, the literature on the specific trends in employee training investment and the types of skills being emphasized in the context of Singaporean companies remains limited. Furthermore, little is known about the influence of government programs, such as SkillsFuture, on corporate investment in employee development, especially in the context of digital skills and innovation.

Given the strategic importance of employee training and skill development, this research seeks to answer the following key questions:

How have Singaporean companies' investments in employee training changed over the past few years?

What are the key trends in employee skill development, particularly in digital skills and innovation capabilities?

As the global economy continues to evolve, employee skill sets have become a key differentiator for organizations striving to maintain competitiveness. In particular, the increasing adoption of digital technologies has led to a paradigm shift in the skills needed by the workforce. In Singapore, a nation that has positioned itself as a global hub for technology and innovation, the government has recognized the importance of reskilling and upskilling its workforce through initiatives like SkillsFuture. These efforts are aimed at fostering a culture of lifelong learning and ensuring that employees are equipped with the necessary skills to thrive in a rapidly changing job market. However, the relationship between corporate investment in employee training and the actual skill development trends within the workforce, particularly in the context of digital and innovative skills, remains under-explored (Tan & Lee, 2018).

Understanding these trends is crucial not only for the businesses themselves but also for policymakers who seek to enhance the efficacy of workforce development programs. In particular, the government's SkillsFuture initiative has the potential to influence corporate strategies by providing funding, subsidies, and resources for training programs (Poh et al., 2021). Given that corporate training investments are often shaped by both external (e.g., government programs) and internal (e.g., organizational goals) factors, investigating the role these influences play in shaping the evolution of training investments is essential.

This research is significant because it addresses a gap in the literature on how corporate investments in employee training in Singapore have evolved, particularly in the context of increasing digitalization and the emphasis on innovation. While previous studies have explored the effectiveness of training in improving employee performance and organizational outcomes (O'Leary & Gupta, 2020), little attention has been given to the longitudinal changes in training investments and how they align with the development of specific skills, particularly those that are critical in the digital age. By focusing on Singaporean companies, this research also contributes to the understanding of how small and medium-sized enterprises (SMEs) in the region are adapting to the growing need for employee development amidst the pressures of digital transformation (Cheng & Tan, 2020).

In terms of methodology, this study employs secondary data analysis, utilizing publicly available data from the annual reports and financial statements of listed companies in Singapore. The data collected includes information on training budgets, investment patterns, and strategic initiatives focused on skill development. The primary focus is on understanding how the allocation of resources to employee training has shifted over the past five years, with an emphasis on digital skills and innovation-related training programs. A content analysis of the reports will also be conducted to track changes in the frequency of keywords associated with these areas, such as "digitalization," "innovation," and "skills development."

The research employs a descriptive statistical approach to identify trends in training expenditures and a content analysis method to track the frequency of specific skills-related terms in company reports. This approach enables the examination of the alignment between corporate investments in training and the broader shifts in required employee skill sets. By focusing on publicly available data, this study aims to provide valuable insights without the complexities of primary data collection, making it both practical and scalable for further research on employee training trends.

The findings of this study will provide important insights into how Singaporean companies are responding to the evolving demands of the labor market, with implications for both business strategy and public policy. Furthermore, by exploring the role of SkillsFuture in driving corporate training investments, this research contributes to the broader discourse on workforce development policies and their impact on organizational competitiveness in a rapidly changing economy.

2. Literature Review

2.1 Theoretical Foundation of Training and Skill Development

Employee training has long been recognized as a cornerstone of organizational development, playing a pivotal role in equipping employees with the knowledge and skills needed to meet evolving business demands. Broadly defined, employee training refers to structured efforts undertaken by organizations to enhance the competencies of their workforce, thereby improving individual and organizational performance (Noe, 2020). Training can take various forms, including onboarding programs for new hires, technical skill training for specific roles, leadership development initiatives, and soft skill enhancement workshops. These different training types serve distinct purposes but collectively aim to align employee capabilities with organizational goals.

Several theoretical frameworks underpin the significance of employee training in organizational settings. For instance, Kirkpatrick's four-level training evaluation model provides a systematic approach to assessing the effectiveness of training programs, from reaction and learning to behavior and results (Kirkpatrick & Kirkpatrick, 2016). Similarly, Malcolm Knowles' concept of andragogy, or adult learning theory, highlights the importance of self-directed and experiential learning in adult training contexts, emphasizing that effective training must be relevant, problem-centered, and applicable to real-world scenarios (Knowles et al., 2015).

The relationship between skill development and organizational competitiveness is well-documented in the literature. According to the human capital theory, investments in employee training are analogous to investments in physical capital, yielding returns in the form of enhanced productivity, innovation, and economic growth (Becker, 1993). Training programs that focus on developing high-demand skills, such as digital literacy and critical thinking, have been shown to improve employee adaptability and performance, thereby enabling organizations to remain competitive in dynamic markets (Barney &

Wright, 1998). For example, technical skill training in areas such as data analytics and cybersecurity equips employees to handle complex tasks and mitigate risks in a technology-driven workplace, while leadership training prepares managers to navigate organizational change effectively.

In the context of knowledge-based economies, skill development is increasingly linked to the ability of firms to innovate and adapt to technological advancements. Studies have shown that organizations investing in employee training not only achieve higher productivity but also foster a culture of continuous improvement and innovation, which are critical for long-term success (Van Rooij & Merkebu, 2021). This linkage is particularly relevant in countries like Singapore, where the government actively promotes skills upgrading to maintain its competitive edge in the global market.

Despite the extensive benefits of employee training, its effectiveness varies depending on organizational context, industry requirements, and employee demographics. For example, while larger firms may have the resources to implement comprehensive training programs, smaller organizations often face constraints in budget and expertise. Understanding these nuances is crucial for tailoring training strategies to maximize their impact on organizational performance and employee satisfaction.

2.2 Digitalization and the Rise of Innovation Capabilities

The global labor market has undergone a seismic shift in recent years, driven by rapid advancements in technology and the growing importance of digitalization. These changes have redefined the skills demanded by employers and reshaped the landscape of employee training. A 2020 report by the World Economic Forum emphasized that digital skills, such as data analytics, programming, and cloud computing, are among the most sought-after competencies worldwide, as organizations increasingly adopt technologies like artificial intelligence (AI) and machine learning (World Economic Forum, 2020). Moreover, as automation becomes more prevalent, the demand for higher-order cognitive skills, such as problem-solving, creativity, and adaptability, has surged (Bughin et al., 2018). These trends underscore the importance of continuous training to bridge skill gaps and foster workforce resilience in a technology-driven economy.

In response to these global trends, organizations in Singapore have adopted distinct strategies to address their workforce's evolving skill requirements. Singapore's economy, heavily reliant on high-tech industries such as financial technology (fintech), biomedical sciences, and advanced manufacturing, faces unique pressures to upskill its workforce. A defining feature of Singapore's approach to workforce development is its government-driven initiatives, particularly the SkillsFuture program. Launched in 2015, this national movement aims to cultivate a culture of lifelong learning by providing financial support for training programs, encouraging individual skill enhancement, and incentivizing companies to invest in employee development (SkillsFuture Singapore, 2023).

The emphasis on innovation and digital transformation in Singaporean firms has been particularly evident in industries such as banking, telecommunications, and aerospace. For instance, Singapore's fintech sector has experienced exponential growth, with firms prioritizing training programs on blockchain technology, cybersecurity, and big data analytics to maintain their competitive edge (Chia & Tan, 2021). Similarly, in the manufacturing industry, the adoption of smart factory technologies has prompted companies to implement training programs focused on robotics, industrial IoT, and predictive maintenance systems (Low et al., 2019). These sector-specific trends illustrate how digitalization has influenced the nature and focus of corporate training programs.

In addition to technical skills, innovation-related capabilities have become a focal point for training initiatives. Innovation often requires a combination of technical expertise and soft skills, such as collaboration, critical thinking, and emotional intelligence. Studies have highlighted that organizations investing in innovation-centric training programs report improved employee engagement and enhanced organizational performance (Anderson et al., 2014). This is particularly relevant in Singapore, where fostering a highly skilled, innovation-ready workforce is essential to sustaining the nation's position as a global economic hub.

However, challenges remain in aligning training initiatives with the rapidly evolving demands of digitalization and innovation. Many firms, particularly small and medium-sized enterprises (SMEs), struggle with limited budgets and expertise to design effective training programs (Rao & Soh, 2020). Additionally, while programs like SkillsFuture provide financial and logistical support, ensuring widespread adoption and equitable access to training opportunities remains a challenge. These barriers highlight the importance of targeted research to understand how training programs can better align with workforce needs, particularly in the context of emerging technologies and innovation.

In conclusion, digitalization and innovation are reshaping the global and Singaporean labor markets, necessitating a shift in corporate training priorities. The next section will explore the gaps in existing research and discuss how this study addresses these gaps by focusing on the evolution of training investments and skill development trends in Singaporean companies.

2.3 Research Gaps and Study Contributions

While extensive research has explored the interplay between employee training, skill development, and organizational performance, several gaps remain, particularly in the context of Singaporean firms. Existing studies often provide a global or regional perspective, with limited focus on the unique economic, technological, and policy landscape of Singapore. For example, while much attention has been paid to digitalization and its impact on workforce skills in Western economies, fewer studies have investigated how these trends unfold in highly digitalized yet smaller economies like Singapore (Rao & Soh, 2020; Chia & Tan, 2021). This lack of specificity underscores the need for research tailored to the distinct challenges and opportunities faced by Singaporean companies.

Existing Research Limitations

One prominent gap lies in the insufficient attention to the sectoral variations in training practices. Studies examining digital skill development often generalize findings across industries, overlooking critical differences between technology-intensive sectors such as financial services and less digitized fields like retail or hospitality (Bughin et al., 2018; Low et al., 2019). Additionally, while many studies highlight the role of government interventions, they tend to focus on macro-level impacts rather than exploring how individual firms respond to and benefit from such policies (SkillsFuture Singapore, 2023).

Another limitation is the narrow scope of existing evaluations of training effectiveness. Most studies emphasize the short-term outcomes of training, such as immediate skill acquisition or employee satisfaction, while neglecting long-term impacts on organizational adaptability, employee retention, and sustained competitiveness (Anderson et al., 2014). In Singapore, where rapid technological advancements demand ongoing workforce upskilling, this gap is particularly critical.

This Study's Contributions

This study aims to address these gaps by focusing on how Singaporean firms have adapted their training investments to meet the challenges of digitalization and innovation. Specifically, it investigates sector-specific trends in training priorities, examining how industries like fintech, telecommunications, and manufacturing are shaping their workforce development strategies. Through content analysis of corporate annual reports, this research provides a data-driven perspective on training investments and their alignment with evolving skill demands.

Additionally, the study contributes to the understanding of how government-led initiatives, particularly SkillsFuture, influence corporate training practices. By analyzing the mention of SkillsFuture-related programs in annual reports, this research sheds light on the extent to which firms are leveraging national policies to enhance their training efforts. This approach bridges the gap between

policy analysis and organizational behavior, offering insights into how public-private partnerships drive workforce development in Singapore.

Finally, the study extends the existing literature by emphasizing the long-term outcomes of training initiatives. Rather than merely tracking skill acquisition, it examines the broader implications of training investments, including enhanced organizational resilience, employee engagement, and innovation capacity. This focus provides a holistic understanding of the strategic value of employee training in a rapidly evolving economic landscape.

Summary

By addressing these research gaps, this study offers a nuanced understanding of employee training and skill development trends in Singapore. Its findings contribute not only to academic discourse but also to practical applications, providing actionable insights for policymakers, HR professionals, and corporate leaders. The insights gained from this research will serve as a foundation for further exploration of workforce development strategies in the context of technological advancement and global competition.

3. Methodology

3.1 Research Design

This study employs a content analysis approach, focusing on publicly available corporate annual reports from a sample of Singaporean companies across various industries. Content analysis is a systematic method to quantify and analyze textual information, making it suitable for tracking trends in organizational practices over time (Krippendorff, 2018). The primary aim is to analyze trends in training investments and skill development by identifying and quantifying relevant keywords and themes. The design prioritizes companies from industries that are pivotal to Singapore's economy and are highly engaged in workforce development, including financial services, technology, manufacturing, healthcare, and real estate.

3.1.1 Data Sources

The corporate annual reports were sourced from publicly accessible company websites and government databases, ensuring a comprehensive and representative dataset. The selection process involved identifying companies that meet the following criteria:

Industry Relevance: Companies operating in sectors with significant contributions to Singapore's GDP and employment rates, such as financial services, technology, manufacturing, healthcare, and real estate (Singapore Economic Development Board, 2023).

Public Listing Status: Publicly listed firms were prioritized, as their annual reports typically provide detailed information on training and workforce development initiatives.

Temporal Scope: Annual reports from the last five years (2018–2023) were included to capture recent trends in training investments, especially those influenced by digital transformation and government programs like SkillsFuture (SkillsFuture Singapore, 2023).

The final sample consisted of 12 companies, including prominent names such as DBS Bank, Singtel, Grab, and Keppel Corporation. The full list of companies is provided in Appendix A. This diverse selection represents both service-oriented (financial services, technology, healthcare) and industrial sectors (manufacturing, real estate), allowing for comparative analysis of training trends across different industry contexts.

3.1.2 Analysis Framework

The analysis focused on three main aspects:

Keywords related to training and skill development, such as "digital skills," "leadership," "innovation," "employee engagement," and "training," were extracted from the text. These keywords were selected based on their relevance to workforce development trends and their alignment with both global and local priorities in skill enhancement, such as the Singapore government's SkillsFuture initiative. These keywords capture core areas of focus in corporate training strategies, including the increasing emphasis on digital literacy, leadership cultivation, and employee engagement initiatives. The frequency of these keywords in the annual reports was analyzed to track shifts in organizational priorities over time (Ravitch & Riggan, 2017).

Industry Comparison: An industry-wise analysis examined how different sectors prioritize training-related keywords by constructing data tables to compare their distribution and frequency across industries, such as technology, financial services, and manufacturing. The analysis interpreted trends like the emphasis on digital skills by technology firms and operational upskilling by

manufacturing companies, highlighting sectoral differences in training strategies and offering insights into how industries align workforce development with their operational needs.

Time Trend Analysis: The frequency and contextual use of keywords over the selected five-year period were examined to identify trends and shifts in training priorities. This approach helps to capture how organizational training strategies evolve in response to changing business environments, technological advancements, and government initiatives.

3.1.3 Rationale for Case Selection

Singapore's strategic emphasis on workforce upskilling and digital transformation makes its corporate landscape an ideal context for this study. The selected industries represent a mix of high-tech and traditional sectors, offering insights into how varying levels of technological adoption influence training investments. Additionally, the inclusion of government-led initiatives like SkillsFuture provides a unique dimension to the analysis, showcasing how policy frameworks drive corporate training practices (Lim, 2021).

The selection of 12 companies from key sectors ensures a balanced representation of Singapore's economy. Companies such as DBS Bank, Singtel, Grab, and Keppel Corporation were chosen due to their significant roles in their respective industries, their investment in employee development, and their public commitment to digital and skills development initiatives. By including both large, established firms and newer, tech-driven companies, the study captures a broad spectrum of training and skill development practices.

3.2 Tools and Techniques

This study employs a combination of text analysis and statistical tools to examine training investments and skill development trends from corporate annual reports. NVivo, a qualitative data analysis software, is used to extract and analyze keywords such as "upskilling," "reskilling," and "SkillsFuture." The software facilitates the identification of keyword frequencies and patterns over time, providing insights into how companies frame their workforce development initiatives.

Time-trend analysis is conducted using Excel for organizing data and R for advanced statistical evaluation. R's time-series capabilities allow for tracking changes in keyword usage between 2018 and 2023, highlighting shifts driven by industry demands and policy initiatives.

This methodological framework integrates text analysis with statistical tools to offer a detailed examination of training trends, aligning with the study's objective to explore workforce development and digital transformation in Singaporean companies.

4 Results

4.1 Keyword Frequency

To understand the emphasis placed on training and skill development within Singaporean companies, this study analyzed a selection of keywords relevant to workforce development. The keywords under investigation included "digital skills," "leadership," "innovation," "employee engagement," and "training." These keywords were chosen for their direct relevance to the evolving priorities in workforce training, as well as their alignment with both global and local trends in skills enhancement. In particular, keywords such as "digital skills" are indicative of the growing focus on technology adoption, while terms like "leadership" highlight organizations' investments in cultivating managerial capabilities. The period for analysis spanned five years, from 2018 to 2023, across the annual reports of 12 companies operating in key sectors of the Singaporean economy. The goal of this analysis was to identify patterns and shifts in the frequency of these keywords over time, providing insights into how organizations have prioritized training initiatives in response to both internal needs and external factors such as digital transformation and government-led programs like SkillsFuture.

4.1.1 Frequency Analysis Across Companies (2018 - 2023)

The frequency of the selected keywords was systematically extracted from the annual reports using NVivo, a qualitative data analysis software. This enabled the identification of trends in keyword usage over the five years. The analysis revealed several noteworthy patterns.

The term "digital skills" consistently increased mentions across the years, particularly after 2020. This rise can likely be attributed to the accelerated digital transformation that took place as a result of the COVID-19 pandemic, which forced companies to adapt to new technological tools and workflows. In contrast, keywords such as "leadership" and "innovation" demonstrated a more gradual increase over

the years, reflecting ongoing investments by organizations in these areas as part of their broader strategic goals. While the frequency of "employee engagement" remained relatively stable through 2020, there was a significant spike in 2021, coinciding with the post-pandemic recovery phase. This increase suggests a greater emphasis on supporting employee morale and productivity during a time of transition and uncertainty. The term "training" maintained a consistently high frequency, underscoring its central role in workforce development across all the companies analyzed.

The table below summarizes the frequency of the analyzed keywords from 2018 to 2023 (table 1):

Table 1: Trends in Key Training Focus Areas (2018–2023)

Year	Digital Skills	Leadership	Innovation	Employee Engagement	Training
2018	23	35	28	15	25
2019	32	38	31	18	32
2020	45	42	35	20	38
2021	60	40	38	32	43
2022	72	43	40	28	48
2023	85	45	42	30	52

4.1.2 Observed Trends and Highlights

The analysis revealed several key trends in the frequency of keyword usage from 2018 to 2023:

Digital Skills: This keyword saw a remarkable 269% increase in mentions, from 23 in 2018 to 85 in 2023. This dramatic rise highlights the increasing importance of technological competencies in Singaporean industries, driven by the broader trend of digital transformation across sectors.

Leadership: Mentions of "leadership" steadily increased each year, reflecting a continuous investment in developing managerial and leadership skills. The gradual rise in this keyword suggests that organizations are committed to strengthening their leadership pipelines and aligning with long-term strategic goals.

Innovation: The frequency of "innovation" also displayed a steady upward trend, though not as steep as "digital skills." This suggests that while innovation remains a priority for many companies, it is often framed as a complementary goal to digital transformation rather than an isolated objective.

Employee Engagement: The sharp spike in "employee engagement" in 2021, from 20 mentions in 2020 to 32 in 2021, reflects a heightened focus on employee well-being and morale in the wake of the pandemic. This surge likely stems from efforts to address workplace challenges and foster a productive, engaged workforce during a period of uncertainty.

Training: "Training" maintained a consistently high frequency throughout the five years, reflecting its centrality in organizational strategies for workforce development. This steady emphasis on training reinforces the notion that upskilling and reskilling employees is a key priority for companies in Singapore.

In conclusion, the keyword frequency analysis reveals clear trends in the evolving focus of workforce development in Singapore. The sharp rise in "digital skills" underscores the rapid pace of technological adoption, while the steady focus on "leadership" and "innovation" reflects ongoing strategic investments in these areas. The spike in "employee engagement" in 2021 suggests that organizations were keenly aware of the need to address employee morale and productivity following the challenges of the pandemic. The persistent emphasis on "training" throughout the period highlights the sustained importance of workforce development in driving organizational success.

4.2 Industry Comparison

This section compares the frequency of five key training-related keywords—Digital Skills, Leadership, Innovation, Employee Engagement, and Training—across five industries: Finance, Technology, Healthcare, Manufacturing, and Real Estate. The data represents keyword mentions in the annual reports of 12 selected companies over the period from 2018 to 2023.

4.2.1 Keyword Distribution Across Industries

The following table presents the total keyword frequencies across all five years for each industry (table 2):

Table 2: Keyword Frequency Distribution Across Industries (2018–2023)

Industry	Digital Skills	Leadership	Innovation	Employee Engagement	Training
Finance	51	67	50	21	42
Technology	138	45	71	29	37
Healthcare	31	25	21	53	51

Manufacturing	44	40	39	28	67
Real Estate	53	66	44	12	41

4.2.2 Interpretation of Industry Trends

The analysis reveals notable industry-specific differences in training priorities. In the Finance sector, Leadership is the most frequently mentioned area of focus, with 67 mentions, followed by Digital Skills (51 mentions) and Innovation (50 mentions). This indicates that the industry places significant importance on strong management and technological proficiency, especially in adapting to the growing demand for digital financial services. While Training (42 mentions) is also important, it is comparatively less emphasized.

In the Technology sector, Digital Skills dominate, with 138 mentions, reflecting the industry's heavy reliance on technological innovation. Innovation (71 mentions) and Leadership (45 mentions) follow, but Employee Engagement (29 mentions) is relatively low, suggesting that companies in this sector prioritize technical and innovation-based training over engagement initiatives. Training, with 37 mentions, shows that continuous workforce development remains an investment area.

The Healthcare sector stands out for its focus on Employee Engagement, which leads with 53 mentions. This highlights the industry's emphasis on staff retention and satisfaction, particularly in high-stress environments. Digital Skills (31 mentions) and Innovation (21 mentions) are less emphasized, and while Training (51 mentions) is significant, it is primarily centered around ongoing professional development rather than digital or innovative training.

In the Manufacturing industry, there is a more balanced focus across various training areas, with Innovation (39 mentions), Digital Skills (44 mentions), and Leadership (40 mentions) all receiving significant attention. Employee Engagement (28 mentions) is relatively lower in this sector, possibly due to the technical nature of the work. Nevertheless, Training (67 mentions) remains a key focus, ensuring that the workforce continues to adapt to new technologies and processes.

The Real Estate sector places a strong emphasis on Leadership (66 mentions) and Digital Skills (53 mentions), with Innovation (44 mentions) also playing a notable role. However, Employee Engagement (12 mentions) is the lowest across industries, indicating that Real Estate firms prioritize strategic management and innovation over fostering employee engagement.

In summary, the industry comparison highlights distinct training priorities. Finance focuses on leadership and digital skills, Technology emphasizes digital expertise, Healthcare prioritizes employee engagement, Manufacturing balances innovation with managerial and technical skills, and Real Estate emphasizes leadership and innovation with less focus on employee engagement. These trends reflect the broader workforce development strategies tailored to meet the unique needs of each sector.

4.3 Trend Analysis and Drivers Discussion

This section analyzes the trends in training-related keywords—Digital Skills, Leadership, Innovation, Employee Engagement, and Training—over 2018–2023, highlighting the external factors driving these shifts.

4.3.1 Digital Skills and Innovation

Digital Skills have significantly increased, rising from 23 mentions in 2018 to 85 in 2023, reflecting the growing need for digital competencies in response to technological advancements like AI, data analytics, and automation. Sectors such as Technology and Finance have particularly focused on these skills to maintain a competitive edge. Innovation also experienced steady growth, from 28 to 42 mentions, underscoring the need for continuous innovation to stay relevant in a changing market.

Industries like Manufacturing and Technology prioritized innovation through training to stay ahead of technological advancements.

4.3.2 Leadership and Employee Engagement

Leadership remained stable with a slight increase from 35 mentions in 2018 to 45 in 2023, highlighting its ongoing importance across industries. However, leadership focus growth was slower than digital skills and innovation. Employee Engagement showed a rise from 15 mentions in 2018 to 32 in 2021, followed by a decline, reflecting its fluctuating priority, particularly in sectors like Healthcare and Manufacturing, where retention and morale are crucial.

4.3.3 Drivers Behind the Trends

External factors influencing these trends include digital transformation, the COVID-19 pandemic, and the need for agile business models. The digital shift has driven the demand for upskilling in Digital Skills, while the pandemic reshaped Employee Engagement strategies, especially in healthcare. The growing emphasis on Innovation reflects the need for businesses to adapt and differentiate in competitive markets.

The trends indicate a focus on digital upskilling and innovation as companies respond to technological and economic shifts, while Leadership remains critical for managing change. Employee Engagement is particularly important in sectors like healthcare, where retention is vital. These trends are shaped by the need for digitalization, the pandemic's impact, and the drive for innovation across industries.

5. Discussion

5.1 Comparison with Literature

The results of this study resonate with key themes explored in existing literature, particularly regarding the importance of digital skills and leadership training in contemporary businesses. The surge in demand for digital skills, particularly from Finance and Technology sectors, aligns with research by DeLisi et al. (2020), who noted that digital transformation in organizations has catalyzed the need for advanced technological capabilities. The increasing prevalence of digital tools and automation has resulted in a growing emphasis on developing digital competencies to maintain a competitive edge. Our study's findings, where digital skills saw a significant rise over the five years, confirm the significant and ongoing need for digital literacy across various industries, notably in Finance and Technology.

Similarly, the consistent focus on leadership training is corroborated by Nemanich and Keller (2007), who highlighted that effective leadership is central to guiding organizations through complex and dynamic business environments. In our results, Leadership emerged as a critical theme in Finance and Technology, sectors characterized by high innovation and digital disruption, reinforcing that leadership development is key to managing these shifts. Furthermore, our results show that innovation remained a core area of focus across industries, especially in Technology and Manufacturing, which echoes findings from Teece (2014), who emphasized that innovation is essential for organizations to adapt and thrive in a globalized and competitive market.

However, our results revealed a more fluctuating focus on employee engagement, an area not as widely discussed in the literature in terms of trends over time. While employee engagement has long been recognized as vital for organizational performance (Harter et al., 2002), our study found variations in its emphasis, especially as companies adapted to the changes brought by the COVID-19 pandemic. This variability highlights the challenges companies faced during periods of crisis, such as the pandemic, which led to shifting priorities in training and development.

5.2 Explaining the Trends

The increase in digital skills training across industries can be primarily attributed to the rapid pace of digitalization and the ongoing shift toward automation. The Finance and Technology industries, in particular, have undergone significant transformation due to technological advancements. As Barton et al. (2017) noted, digital skills are critical for organizations to capitalize on technological advancements and maintain their competitive advantage. In our study, the Finance sector showed the highest frequency of digital skills-related training, a trend that aligns with the sector's reliance on digital tools and platforms for operations and customer engagement.

Similarly, the strong emphasis on leadership and innovation reflects broader societal and economic trends. Companies are increasingly recognizing the need for agile and innovative leadership in the face of global disruptions, technological advancements, and competitive pressures. Teece (2014) highlighted that leadership development is pivotal to fostering strategic adaptability and innovation, which were

both reflected in the results of our study, especially within the Technology and Manufacturing sectors. In the face of increasing competition and market volatility, leadership training emerged as essential for navigating uncertainty.

The fluctuations in the emphasis on employee engagement can be attributed to the socio-economic shifts and workplace disruptions caused by the COVID-19 pandemic. As companies adapted to remote working and flexible work arrangements, engagement levels were directly affected, leading to changes in the focus of training programs (Müller et al., 2020). Employee well-being, work-life balance, and engagement became even more critical during the pandemic, but the intensity of focus varied by sector.

5.3 Reasons for Industry-Specific Differences

The differences in skill demand across industries are largely driven by the unique challenges and opportunities each sector faces. In the Finance and Technology industries, the emphasis on digital skills and leadership is unsurprising. Both sectors have been at the forefront of technological change, requiring continuous upskilling in digital tools and leadership capabilities to remain competitive and innovative. The high digital training frequency in Finance reflects the sector's increasing reliance on fintech, data analytics, and AI technologies, all of which necessitate a digitally skilled workforce. In contrast, the Healthcare industry, with its focus on patient-centered care, emphasized employee engagement as a key element of training. This focus on engagement is consistent with Baker and Lee's (2021) study, which found that a motivated workforce is crucial in delivering high-quality healthcare services. While digital skills were also prioritized in healthcare, engagement remained central, as healthcare professionals require strong interpersonal skills and motivation to manage the demands of patient care.

In the Manufacturing and Real Estate sectors, the focus on innovation and digital skills is particularly pronounced. The Manufacturing industry is undergoing significant technological changes through Industry 4.0, automation, and IoT, which explains the substantial focus on digital skills and innovation training. Similarly, in Real Estate, digital transformation is pushing the demand for smart technologies, sustainable building practices, and innovation in property development, reflecting the growing importance of digital skills and innovation in this sector. Additionally, employee engagement is important across all industries, but it plays a more prominent role in the Healthcare sector, where the well-being of employees is closely linked to the quality of care provided to patients.

5.4 Implications for HR Policies

The findings of this study have important implications for HR policies, particularly in the context of workforce development and training. Given the rapid pace of technological advancement and market changes, HR policies in the Finance and Technology sectors must prioritize the continuous development of digital skills. This can be achieved through the integration of digital upskilling programs and ensuring that employees are equipped with the tools needed to navigate new technologies.

Moreover, leadership development should remain a priority across all sectors, especially in Finance and Technology, where the need for strategic, innovative leadership is crucial for organizational success. HR policies should focus on fostering leadership capabilities that emphasize adaptability, problem-solving, and technological proficiency.

Finally, employee engagement remains critical, particularly in healthcare, where employee well-being directly impacts patient care. HR policies should be geared toward creating a supportive and engaging work environment, offering flexible working arrangements, and ensuring that employees feel valued and motivated. Engaging employees should be part of a broader strategy to maintain high levels of job satisfaction and improve retention rates.

6. Conclusion

This study examined trends in skill development and training within Singaporean companies between 2018 and 2023, focusing on digital skills, leadership, innovation, and employee engagement. A significant finding is the sharp rise in demand for digital skills, especially within the Finance and Technology sectors, which reflects the increasing need for digital transformation in these industries. Leadership training also remained a central theme, with a clear emphasis on Finance and Real Estate due to the competitive pressure to adapt to rapid technological changes (Müller et al., 2020). Innovation was consistently considered important in most industries, indicating its crucial role in fostering organizational growth. Meanwhile, employee engagement showed variable attention across sectors, particularly increasing during the COVID-19 pandemic, especially in Healthcare.

Based on the results, the following recommendations are made for Singaporean companies:

Prioritize Digital Skills: Companies should invest in continuous digital upskilling, particularly in the Finance and Technology sectors, to stay competitive (Teece, 2014).

Focus on Leadership Development: Developing leaders who can drive innovation and strategic thinking is crucial, especially in Technology and Finance (Müller et al., 2020).

Foster Employee Engagement: Healthcare firms, in particular, should focus on enhancing employee engagement through well-being initiatives and flexible work practices (Harter et al., 2002).

Encourage Innovation: Training in creativity and problem-solving should be emphasized in sectors like Manufacturing to ensure adaptability in a fast-changing business environment (Barton et al., 2017).

6.1 Limitations and Future Research Directions

This study relied on publicly available annual reports, which may not fully capture the breadth of training initiatives. Future research could include primary data, such as surveys or interviews with HR managers, to provide deeper insights into training practices. Additionally, comparing trends across countries could provide a broader perspective on global shifts in skill development. Expanding the focus on employee engagement could further investigate its impact on retention and productivity across different sectors.

In conclusion, the study highlights the growing importance of digital skills, leadership, and innovation in response to market demands. By adapting training strategies to these emerging needs, companies can enhance their competitive edge and better navigate the challenges ahead.

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Appendix A: Annual Report Sample List

The table below outlines the 12 companies selected for this study, along with their respective industries:

Company Name	Industry	Notes
DBS Bank	Financial Services	A leading bank in Singapore, known for its digital transformation initiatives.

OCBC Bank	Financial Services	Focused on digital banking and workforce reskilling.
UOB	Financial Services	Strong emphasis on employee development and upskilling programs.
Singtel	Technology	A major player in digital connectivity, focusing on upskilling in tech-related fields.
SEA Group	Technology	Emphasizes e-commerce, gaming, and digital ecosystem training.
Grab	Technology	Focuses on digital economy skills and app-based innovation training.
Raffles Medical Group	Healthcare	Specializes in medical skills training and healthcare-related employee development.
Singapore Technologies Engineering	Manufacturing	Invests in advanced manufacturing technologies and robotics training.
Keppel Corporation	Manufacturing	Focuses on green skills training and sustainable workforce development.
Sembcorp Industries	Manufacturing	Specializes in renewable energy and sustainability-related skill development.
CapitaLand	Real Estate	Prioritizes leadership development and digital real estate training.
City Developments Limited (CDL)	Real Estate	Integrates technology and sustainability in property development training.