



Bridging Existing Competencies and Future Upskilling Needs: The Case of Southeast Asia

Azizan Had, Shanty Emerson

*Universiti Malaysia Sabah, Kuching Polytechnic
Sandakan Campus. Sarawak Malaysia*

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Abstract

Skill development is increasingly recognised as a fundamental driver of economic growth, social mobility, and workforce adaptability, especially in dynamic and rapidly transforming regions like Southeast Asia. Amid the disruptions engendered by the Fourth Industrial Revolution and the burgeoning digital economy, Southeast Asia confronts a dual challenge: addressing existing skill gaps while equipping its workforce with future-oriented competencies. This paper delves into the critical intersection between the current skill landscape in Southeast Asia and the prospective upskilling demands that arise from ongoing technological innovations, the forces of globalisation, and significant demographic shifts. The analysis reveals a pressing need for education systems that are agile and responsive to the fast-paced evolution of job requirements. It underscores the importance of fostering robust public-private partnerships and the adoption of innovative learning methodologies that facilitate skills acquisition and enhancement. By examining country-specific initiatives and regional trends, this study provides insight into best practices that can be leveraged to maintain regional competitiveness. The paper also posits that governments, industries, and academic institutions must collaborate to promote lifelong learning frameworks encompassing diverse populations, thereby closing the digital divide that often exacerbates inequalities. Attention is given to sectors poised for high demand, including technology, healthcare, and renewable energy, emphasising the necessity for targeted skill development initiatives that address specific market needs. Finally, the paper culminates in policy recommendations to strengthen skill ecosystems across Southeast Asia. These recommendations advocate for increased investment in educational infrastructure, the integration of technology in learning processes, and alignment with long-term developmental goals that ensure a sustainable and inclusive economic future for the region.

Keywords: Skill Development, Economic Growth, Social Mobility, Workforce Adaptability, Southeast Asia

I. INTRODUCTION

Skill development is increasingly recognised as a fundamental driver of economic growth, social mobility, and workforce adaptability, especially in dynamic and rapidly transforming regions like Southeast Asia. Amid the disruptions engendered by the Fourth Industrial Revolution and the burgeoning digital economy, Southeast Asia confronts a dual challenge: addressing existing skill gaps while equipping its workforce with future-oriented competencies. This paper adopts a theory-based approach to thoroughly examine and analyse the circumstances in Southeast Asia. The theory used for the paper is the Human Capital Theory (HCT). The HCT is highly relevant to skill development in Southeast Asia, particularly as the region grapples with rapid economic changes and the need for a skilled workforce. The HCT posits that individuals' skills, knowledge, and experiences constitute a form of capital that can be invested in to enhance productivity and economic growth. This theory emphasises that education and training are critical investments that yield significant returns for individuals in higher earnings and economies through increased productivity and innovation (Phan & Coxhead, 2015). In Southeast Asia (SEA), where economic growth increasingly depends on a skilled workforce, HCT serves as a vital framework for understanding the relationship between skill development and economic advancement.

The foundational principles of HCT, as articulated by Becker¹, Mincer², Schultz³ and

¹Gary Becker was a prominent American economist whose pioneering work in Human Capital Theory reshaped the understanding of economic behaviour and investment in human capabilities. Born in 1930, Becker's influential career spanned various fields, including labour economics, education, and social issues. He introduced the idea that individuals invest in their own



Spence⁴, emphasise that investments in education and training enhance individual productivity and economic growth. This is particularly pertinent in SEA, where diverse economies increasingly recognise the importance of human capital in driving development and competitiveness (Phan & Coxhead, 2015). Becker (1964) argued that human capital is akin to physical capital, where investments in

education, training, and health to enhance their productivity and economic value, much like investments in physical capital. One of Becker's seminal works, "Human Capital" (1964), laid the foundation for analyzing how investments in education and skill development contribute to individuals' earning potential and overall economic growth. He emphasized the importance of education as a vital asset and argued that the benefits derived from education extend beyond individual gain, positively impacting society as a whole.

²Jacob Mincer, a prominent economist and a pivotal figure in the development of Human Capital Theory, significantly contributed to our understanding of how education and skills impact labour market outcomes. His seminal work primarily focuses on the relationship between education, labour market experience, and earning potential, establishing foundational insights that continue to influence labour economics today. One of Mincer's most influential works is his 1974 book, "Schooling, Experience, and Earnings," where he introduced what is now known as the Mincer Earnings Equation. This equation quantitatively captures how individual earnings are determined by educational attainment and work experience. Mincer discovered that education significantly increases earning potential, and he articulated that the relationship is often logarithmic, meaning that the returns on education diminish as one achieves higher levels of schooling. His exhaustive analysis demonstrated that formal education and practical experience are indispensable for maximizing income over a lifetime.

³Theodor W. Schultz was a prominent economist known for his pioneering work on Human Capital Theory, which fundamentally transformed how economists and policymakers view education and training concerning economic growth and individual productivity. Born in 1902 in North Dakota, Schultz made significant contributions to economics, particularly in rural development and human resource investment. One of Schultz's key contributions is the concept of "human capital," which refers to the economic value of an individual's skills, knowledge, and abilities. This idea emphasizes that investing in people through education and training can enhance productivity and economic returns. His groundbreaking work highlighted the importance of considering education as not just a public good but an essential form of capital investment that benefits both individuals and society.

⁴Michael Spence is an influential economist best known for his work on signalling theory, which he introduced in the context of labor markets and education. His seminal model, developed in the 1970s, explores how individuals use educational credentials as signals to potential employers about their abilities and skills, thereby reducing information asymmetry in hiring decisions. Spence argued that education serves not only as a means of acquiring knowledge but also as a way for job seekers to signal their competence to employers, which can lead to higher wages and better job opportunities. This theory has significant implications for understanding labor market dynamics and the role of education in shaping economic outcomes, highlighting the importance of perceived ability in employment contexts.

education and training lead to enhanced productivity and economic returns (Phan & Coxhead, 2015). He emphasised that individuals who invest in their education will likely earn higher wages and experience more excellent job stability. Similarly, Schultz (1961) highlighted the role of education in improving economic performance, asserting that human capital development is essential for fostering economic growth and reducing poverty. "As Becker (1964) argued, investments in education and training represent critical levers for enhancing productivity and economic growth, a principle that holds particular relevance for SEA's dynamic economies." Both Becker and Schultz underscore the critical importance of investing in human capital to achieve sustainable economic development, particularly in a rapidly changing global landscape (Moyo & Francis, 2018).

The relationship between HCT and skill development in SEA can be observed through various lenses. Firstly, the quality of its human capital significantly influences the region's economic growth. Studies have shown that SEAN countries investing in education and vocational training experience higher economic growth rates (Haini, 2019; Phan & Coxhead, 2015). For instance, Salim's research highlights the role of information and communication technology (ICT) in improving labour productivity, suggesting that enhancing human capital through technological education is crucial for economic advancement (Salim, 2024). This aligns with HCT's assertion that education is a vital investment that yields substantial returns in terms of productivity and income.

Moreover, the diversity of the labour force in SEA, characterised by varying levels of education and skills, necessitates targeted skill development initiatives. HCT posits that human capital is not uniform; it varies across individuals and regions, influencing economic outcomes (Haini, 2019). For example, with their diverse linguistic and cultural backgrounds, the ASEAN economies face unique challenges in harmonising skill development efforts to meet labour market demands (Haini, 2019). This complexity underscores the need for tailored educational programs that can effectively enhance the workforce's skills in alignment with regional economic goals.

The HCT also focused on practical skills training, such as vocational education and training (VET), critical skill development components in SEA. VET programs are designed to equip individuals with specific skills in demand in the labour market, facilitating smoother transitions into



employment (Kamran, 2015). The emphasis on practical skills training reflects HCT's focus on the economic value of human capital, as it prepares individuals to contribute effectively to their respective economies. Furthermore, the integration of ICT in education, as discussed by Hong and Songan, illustrates how technological advancements can enhance the effectiveness of skill development initiatives (Hong & Songan, 2011). The increasing reliance on digital platforms for education and training in SEA not only broadens access to learning opportunities but also aligns with the principles of HCT by fostering a more skilled and adaptable workforce.

HCT provides a robust framework for understanding the dynamics of skill development in SEA. By emphasising the importance of education and training as investments in human capital, HCT underscores the potential for economic growth and development in the region. As SEAN countries continue to navigate the complexities of globalisation and technological change, the principles of HCT will remain integral to shaping effective skill development strategies. Applying HCT to the SEA context reveals significant insights into the uneven investment in education and the skill gaps prevalent in sectors such as agriculture and manufacturing. Theodore Schultz's contributions to HCT emphasise the importance of education as a form of capital that can lead to economic growth. Schultz argued that investments in human capital are crucial for enhancing productivity and economic development, particularly in developing regions (Phan & Coxhead, 2015). In SEA, however, the timing and extent of these investments have varied significantly, leading to disparities in educational attainment and access (Phan & Coxhead, 2015).

CURRENT SKILL COMPETENCIES IN SOUTHEAST ASIA

The region's workforce competencies are characterised by significant disparities across different sectors, influenced by varying levels of investment in human capital, technological advancements, and educational attainment. SEA's workforce exhibits a range of competencies, particularly in agriculture, manufacturing, and information technology sectors. The agricultural sector, which employs a substantial portion of the workforce, often faces skill gaps and low productivity challenges. Many workers in this sector lack access to modern agricultural techniques and vocational training, which limits their ability to enhance productivity and adapt to changing market demands (Liu et al., 2020). In contrast, the

manufacturing sector has seen more significant investments in skill development, particularly in countries like Vietnam and Thailand, with a growing emphasis on technical skills and vocational education (Phan & Coxhead, 2015).

Moreover, the rise of the digital economy in SEA has led to an increasing demand for competencies in ICT. As highlighted by Salim, integrating ICT into various sectors has improved labour productivity, indicating a shift towards a more skilled workforce capable of leveraging technology for economic growth (Salim, 2024). However, a notable skills gap remains, particularly in advanced technological competencies, which poses challenges for sustained economic development in the region (Liu et al., 2020; Salim, 2024).

From the perspective of HCT, the uneven investment in education and training across SEA can be attributed to several factors, including economic conditions, government policies, and cultural attitudes towards education. Schultz's work emphasises that investments in human capital are essential for enhancing productivity and fostering economic growth (Phan & Coxhead, 2015). In SEA, countries prioritising education, such as Singapore and Malaysia, have experienced more robust economic growth than those with lower educational investments, such as Myanmar and Laos (Phan & Coxhead, 2015). This disparity highlights the critical role of human capital in shaping workforce competencies and overall economic performance.

Jacob Mincer's earnings function further elucidates the relationship between education, skills, and earnings in the labour market. The function suggests that higher levels of education correlate with increased earnings, which can be observed in the manufacturing sector, where skilled labour commands higher wages compared to unskilled labour in agriculture (Phan & Coxhead, 2015). This correlation underscores the importance of aligning educational outcomes with labour market demands to address skill gaps effectively. Additionally, the findings from Haini indicate that the relatively poorer ASEAN economies are catching up to their wealthier counterparts. Still, this convergence is contingent upon improvements in human capital formation (Haini, 2019). As such, the development of targeted educational programs and vocational training initiatives is crucial for enhancing the skill competencies of the workforce, particularly in sectors lagging behind.

Becker (1964) argued that human capital investments are essential for driving sectoral



competitiveness, as they enhance the skills and productivity of the workforce, ultimately leading to higher economic returns. He emphasises that investments in human capital are vital for strengthening sectoral competitiveness, particularly within the manufacturing sector. In the context of SEA, the significance of such investments is evident as countries in the region strive to boost productivity and maintain a competitive edge in a rapidly evolving global market. The manufacturing sector is a cornerstone of many SEA economies, and human capital investments manifest in various forms, including education, vocational training, and continuous professional development. These investments yield a more skilled workforce capable of adopting new technologies, improving processes, and innovating products, ultimately enhancing productivity and competitiveness.

For instance, Malaysia⁵, Vietnam⁶, Thailand⁷ and Indonesia⁸ have invested in human

⁵In Malaysia the government has initiated various programs aimed at upskilling workers in the manufacturing industry. The Malaysian Government's Industry 4.0 policy highlights the importance of digitalization and automation, encouraging companies to invest in employee training to harness these advancements. Programs like the Human Resource Development Fund (HRDF) support continuous learning initiatives, enabling manufacturing employees to upskill in areas such as robotics, data analytics, and automation. As a result, Malaysian manufacturers can enhance their capabilities, reduce production costs, and improve product quality, positioning themselves competitively in the global market.

⁶In Vietnam, the manufacturing sector has seen rapid growth in recent years, driven by both foreign direct investment (FDI) and local firm development. The Vietnamese government has recognized that human capital is crucial for sustaining this growth. Initiatives such as the National Training Strategy aim to align vocational education and training (VET) with industry needs, focusing on developing skills required for advanced manufacturing processes. This strategic alignment ensures that the workforce is not only equipped with fundamental skills but is also responsive to the needs of modern manufacturing practices, thereby enhancing competitiveness.

⁷Thailand's Eastern Economic Corridor (EEC) development plan emphasizes the integration of human capital development into its growth strategy. The EEC aims to transform Thailand into a regional hub for advanced industries, including manufacturing, biotechnology, and robotics. To achieve this, significant investments in education and skills training, particularly in STEM (Science, Technology, Engineering, and Mathematics) fields, are crucial. By fostering partnerships between educational institutions and industries, Thailand seeks to create a workforce that can drive innovation and improve manufacturing output, thereby strengthening its position in the Southeast Asian manufacturing landscape.

⁸In Indonesia, the push for increased productivity in the manufacturing sector has led to greater emphasis on human capital development. The government's "Making Indonesia 4.0" initiative is designed to prepare the workforce for the fourth industrial revolution through upskilling in digital technology and

capital investment programs that reflect strategic efforts to enhance workforce skills. In Malaysia, initiatives such as SkillsFuture and Technical and Vocational Education and Training (TVET) aim to align training with industry demands and promote lifelong learning. Vietnam's Vocational Training Strategy and Project 92 focus on improving employability in high-growth sectors. Thailand's Thailand 4.0 framework emphasises STEM and digital skills, while the Vocational Education Commission ensures relevant training. Indonesia's National Employment System and revitalisation of vocational education aim to equip workers for vital economic sectors. Collectively, these programs contribute to fostering economic growth and addressing skill gaps across the region.

Becker's (1964) hypothesis that human capital investments drive sectoral competitiveness is vividly illustrated through the manufacturing sectors in SEA. Countries like Malaysia, Vietnam, Thailand, and Indonesia showcase the importance of upskilling initiatives and educational reforms to cultivate a skilled workforce. By prioritising human capital development, these nations enhance their manufacturing productivity and ensure sustainable economic growth and competitiveness in the global marketplace.

Schultz (1961) emphasised that addressing skill disparities between urban and rural populations is crucial for maximising national productivity, a challenge evident in SEA's agriculture sector. He highlighted the vital connection between equitable skill development and national economic productivity. He argued that disparities in education and training, particularly between urban and rural populations, limit individual opportunities and hinder economic growth. Countries can bridge these gaps by investing in human capital, enhancing productivity and fostering social mobility. In SEA, prioritising equitable access to education and vocational training is crucial for unlocking the region's full economic potential and building a resilient workforce capable of adapting to changing demands.

management practices. Programs that focus on enhancing digital skills among workers in textiles, automotive, and electronics manufacturing are pivotal in promoting efficiency and competitive advantage.



FUTURE UPSKILLING NEEDS IN SOUTHEAST ASIA

Becker (1964) emphasised the importance of investing in human capital, arguing that such investments yield significant returns, particularly in rapidly evolving economies. This framework underscores the critical need for developing digital literacy and STEM education, as these competencies are essential for maintaining competitiveness in the face of technological advancements. In the context of Industry 4.0, Spence's (1973) signalling theory further illuminates the necessity for individuals to acquire certifications and micro-credentials, which serve as vital indicators of proficiency and skill validation to employers. As work environments increasingly value specialised knowledge, these credentials enhance individual employability and help organisations make informed hiring decisions, ensuring that the workforce possesses the requisite skills to navigate and thrive in a digitally driven economy.

Based on the perspectives of HCT theorists, I identify five critical upskilling needs essential for the economic development of SEAn countries. The first three areas focus on computer and information technology, highlighting the growing demand for digital competencies. The last two regions emphasise the importance of entrepreneurial skills and environmental awareness, reflecting the need for innovation and sustainability in a rapidly changing global landscape. This comprehensive approach to upskilling can empower nations to thrive in the future economy. The first upskilling needs involved digital literacy and ICT skills. As SEA continues to embrace digital transformation, there is an increasing demand for digital literacy across all sectors. ICT skills are essential for enabling workers to adapt to new technologies and processes. According to Salim, the integration of ICT has been shown to significantly improve labour productivity, indicating that enhancing digital skills is crucial for economic advancement Salim (2024). This aligns with HCT, which posits that investments in education and training yield substantial returns in terms of productivity.

The second skill is data analytics and artificial intelligence (AI). The rise of big data and AI technologies necessitates a workforce proficient in data analytics. Data interpretation, machine learning, and AI application skills are becoming increasingly valuable, particularly in sectors such as finance, healthcare, and manufacturing. Crook et al. highlight that firms that invest in human capital,

particularly in specialised skills like data analytics, tend to outperform their competitors (Crook et al., 2011). This underscores the importance of developing a workforce equipped with these competencies to drive innovation and efficiency. The third one is soft skills and emotional intelligence. Besides technical skills, there is a growing recognition of the importance of soft skills, such as communication, teamwork, and emotional intelligence. These competencies are essential for fostering collaboration and adaptability in a rapidly changing work environment. Ng and Feldman emphasise that human capital encompasses technical skills and cognitive and interpersonal abilities that enhance productivity and career success (Ng & Feldman, 2010). Therefore, training programs incorporating soft skills development will prepare the workforce for future challenges.

The fourth one is that entrepreneurial skills are becoming increasingly critical. Yet, specific uncommon skills are emerging as essential for future business leaders. Among these is the ability to deeply understand and leverage systems thinking. This skill enables entrepreneurs to identify interconnections within complex networks, whether market dynamics, supply chains, or social interactions. By recognising how different elements within a system influence one another, entrepreneurs can make more informed decisions that ultimately enhance their business strategy. As SEA economies seek to diversify and innovate, fostering entrepreneurial skills among the workforce is crucial. Skills related to entrepreneurship, such as creativity, problem-solving, and risk management, are essential for driving economic growth and job creation. The ability to innovate and adapt to market changes is a crucial component of human capital that can significantly impact regional economic resilience (Galama & Kippersluis, 2015).

The fifth and final skill, sustainability and green skills is becoming increasingly important in our world today. As the emphasis on sustainable development grows, individuals and organisations must understand and implement practices that promote environmental responsibility and resource efficiency. This not only helps mitigate the impact of climate change but also paves the way for a more sustainable future. There is a need for skills related to environmental management and sustainable practices. Competencies in renewable energy, waste management, and sustainable agriculture are becoming essential as SEA countries strive to meet global sustainability goals. This aligns with the



broader understanding of human capital as a driver of economic growth and a contributor to social and environmental well-being (Nirwana, 2018).

HCT provides a robust framework for understanding the implications of these emerging skill sets on workforce development in SEA. The theory posits that investments in education and training enhance individual productivity and, by extension, economic growth. As SEA countries invest in upskilling their workforce, they can expect to see improvements in productivity, innovation, and overall financial performance. Moreover, the regional skill competency disparities highlight the need for targeted policies that address specific skill gaps. For instance, countries with lower levels of educational attainment may require more foundational training in digital literacy before advancing to more specialised skills like data analytics or AI (Bunnell & Sambamurthy, 2022). This tailored approach to skill development is essential for maximising the returns on investment in human capital. The future upskilling needs in SEA, as analysed through the lens of HCT, emphasise the importance of developing a workforce equipped with digital, analytical, soft, entrepreneurial, and sustainability-related skills. Addressing these needs will be crucial for driving technological and economic transformation in the region, ultimately enhancing productivity and fostering sustainable growth.

BRIDGING THE GAP: STRATEGIES FOR UPSKILLING

Bridging the gap in skills between urban and rural populations requires a multifaceted approach that integrates HCT into actionable strategies. One prominent example is Singapore's SkillsFuture initiative, which embodies Becker's (1964) emphasis on investing in human capital. This government program provides Singaporeans with subsidies and credits for various training courses, encouraging continuous learning and skill enhancement. The program improves individual employability by fostering an environment where education and vocational training are prioritised. It ensures that the country's workforce remains adaptable and competitive in the global economy. Such targeted interventions can address skill disparities and promote equitable access to opportunities, ultimately driving national productivity.

Companies increasingly recognise the need for lifelong learning and development as a critical organisational strategy in the private sector. Many firms have adopted structured training programs that

align with the principles outlined by Becker, investing in their employees' skills to enhance overall productivity. For instance, technology companies often provide ongoing training in emerging areas such as data analytics and AI to keep their workforce at the forefront of innovation. This aligns with Mincer's (1974) perspective on the return on investment for education and training, advocating that continuous skill development is essential for sustaining career growth. By nurturing a culture of upskilling within organisations, businesses can fill skill gaps, leading to higher employee retention and increased competitiveness.

Moreover, recognising the importance of soft skills and technical competencies indicates a shift towards holistic upskilling strategies that can significantly enhance economic productivity. Training programs focusing on soft skills, such as communication and emotional intelligence, are being integrated into existing curricula to prepare individuals for diverse workplace demands. As suggested by Mincer, the adaptability of the workforce is vital in an ever-evolving job market, making lifelong learning a necessity rather than an option. These initiatives collectively bridge the gap between education and industry needs, ensuring that workers are equipped with relevant technical skills and possess the interpersonal abilities required to thrive in collaborative environments. By fostering these comprehensive strategies, SEAn countries can harness their human capital effectively and achieve sustainable economic growth.

The urban-rural gap remains a significant challenge in many developing countries. Still, government-led policies, particularly in TVET and the Human Resources Development Fund (HRDF), can play a pivotal role in bridging this divide. These initiatives grounded in HCT underscore the necessity of public investment in skills development to enhance workforce capabilities, particularly in rural areas where educational opportunities may be limited. By strengthening the skills and competencies of the rural population, these policies aim to create a more equitable distribution of human capital. This investment fosters economic growth and ensures that rural communities are equipped to engage in and benefit from evolving economic landscapes, promoting sustainable development across regions.

Corporate contributions to workforce training represent another essential strategy for addressing the urban-rural divide. The application of



Spence's (1973) signalling theory highlights the importance of certifications obtained through privatesector programs, which serve as critical indicators of an individual's skills and competencies to potential employers. These certifications provide a tangible means for workers, especially in rural areas, to signal their qualifications and readiness for employment in emerging industries. By investing in training initiatives that lead to recognised certifications, companies not only fulfil their workforce needs but also contribute to the overall enhancement of human capital in their regions. This collaboration between the corporate sector and local communities facilitates improved employment prospects, thus narrowing the urban-rural gap.

Education reforms are crucial for ensuring inclusivity and access to quality education, mainly through strategies like modular learning and e-learning. Schultz (1961) emphasised the need for systemic education reform to enhance access and quality, particularly in underserved areas. By adopting more flexible and accessible learning models, educational institutions can cater to diverse learning needs and enable individuals from rural backgrounds to acquire the necessary skills for a competitive economy. E-learning, for instance, allows students to engage with educational content outside traditional classroom settings, thus breaking geographical barriers. Such reforms promote equal opportunities for individuals in urban and rural areas and empower them with the knowledge and skills needed to participate actively in their local economies and beyond.

Bridging the skills gap in SEA requires a multifaceted approach that leverages HCT to inform actionable strategies for upskilling and reskilling the workforce. SEA can enhance its workforce capabilities and drive economic transformation by implementing targeted training programs, promoting lifelong learning, developing effective leadership, utilising collaborative learning approaches, fostering digital competence, and encouraging public-private partnerships. These strategies align with the principles of HCT and address the pressing need for a skilled workforce in an increasingly competitive global landscape.

CHALLENGES IN IMPLEMENTATION

One of the prominent challenges in implementing skill development initiatives is the issue of financial barriers, particularly funding constraints that limit the effectiveness and reach of these programs. Schultz (1961) emphasised the importance of public investment in education as a catalyst for substantial national economic returns.

When governments allocate insufficient resources to education and vocational training, a skill gap hampers economic growth. Many countries in SEA face challenges related to the quality and accessibility of educational institutions. Insufficient funding, outdated curricula, and a lack of qualified educators contribute to a system that often fails to equip students with the necessary skills for the labour market (Phan & Coxhead, 2015). In SEA, where economies are rapidly evolving, the misalignment between available funding and the growing demand for skilled labour results in inefficiency in human capital investment. Training programs may fail to meet the current market needs without adequate financial support, leading to an ill-prepared workforce for emerging challenges and opportunities. Economic inequality across the region exacerbates barriers to skill development.

Wealthier countries like Singapore have the resources to invest heavily in education and training. At the same time, poorer nations struggle to provide essential educational services (Phan & Coxhead, 2015). The presence of wealthier nations in SEA has contributed to brain drain in poorer countries. The brain drain phenomenon, where skilled workers migrate to more developed countries for better opportunities, poses a significant challenge for SEA. As noted by Ullah et al., the outflow of talent depletes the local workforce. It undermines the region's potential for human capital development (Ullah et al., 2019). This migration creates a cycle where the remaining workforce is less skilled, further perpetuating the inefficiencies in human capital investment.

Furthermore, the disconnect between training offerings and labour market requirements exacerbates the existing inefficiencies in skill development. Many educational institutions and training providers develop programs without fully understanding the specific needs of industries. As highlighted by Schultz (1961), successful human capital investments must prioritise alignment with economic demands to maximise their returns. When training programs do not address the competencies needed in the job market, graduates often lack the relevant skills employers seek. This discrepancy contributes to high unemployment rates among skilled graduates and a lack of qualified candidates for available positions, stunting overall economic productivity.

Cultural and structural resistance also poses a significant barrier to implementing lifelong learning and skill enhancement initiatives effectively. Becker (1964) argues that societal attitudes towards education can significantly



influence workforce modernisation efforts. In some SEA countries, there is a prevailing belief that traditional academic pathways are superior to vocational training, leading to a lack of investment in skills critical for economic growth (Ullah et al., 2019). This cultural bias can make a workforce ill-equipped to meet emerging industries' demands. In many cultures, particularly in rural areas, there is a reluctance to embrace continuous learning due to deeply ingrained beliefs about traditional educational pathways. This cultural resistance discourages individuals from seeking further education and training. It impacts employers who may not prioritise skill development within their organisations. As a result, companies and employees miss opportunities for growth and adaptability, ultimately hindering the region's competitiveness in a global economy that increasingly values a skilled workforce.

In summary, addressing the challenges in skilled development requires strategic interventions that focus on overcoming financial barriers and cultural resistance. By aligning funding allocations with the needs of the labour market, as advocated by Schultz (1961), governments can ensure that education and vocational training contribute to broader economic goals. Simultaneously, fostering a cultural shift that embraces lifelong learning, as Becker (1964) suggested, is crucial for developing an agile workforce that can thrive in a constantly evolving environment. These combined efforts will enhance human capital investment efficiency and drive sustainable economic growth in the region.

II. Recommendations and Conclusion

In today's rapidly evolving economy, investing in skill development is paramount for fostering economic growth and adaptability. Foundational theorists like Gary Becker and Theodore Schultz have long asserted the value of human capital as a crucial component for economic prosperity. Schultz (1961) emphasised that enhancing the quality of the workforce through education and training directly correlates with increased productivity and economic output. Likewise, Becker (1964) presented the notion that investments in human capital yield significant returns for both individuals and society. As economies navigate the complexities of globalisation and technological advancements, prioritising skill development will enhance economic performance and ensure that the workforce can thrive in an ever-changing landscape.

A compelling argument for the widespread adoption of micro-credentials and modular education lies in Spence's (1973) signalling theory. This theory posits that education serves as a signal to employers about an individual's abilities and potential productivity. Micro-credentials and modular education can provide flexible learning pathways, allowing individuals to acquire specific skills relevant to the job market. By embracing this approach, educational institutions and training providers can offer targeted skill development that meets the demonstrated needs of industries, thus optimising the alignment between education and employment opportunities. This strategy is essential in reducing skill gaps and promoting a workforce equipped to handle future economic challenges.

Expanding digital infrastructure to address geographical inequalities is vital to effectively invest in skill development, as highlighted by Schultz (1961). In many regions, access to high-quality educational resources and training programs is limited by inadequate internet connectivity and technological tools. Public and private sector collaboration is essential in building a robust digital framework that ensures equitable access to educational resources across urban and rural areas. For instance, initiatives like the ASEAN Skills Competition can be expanded to include more sectors and involve a broader range of stakeholders, thereby enhancing regional skill development (Ullah et al., 2019). Investing in digital infrastructure can empower individuals in less accessible regions to partake in skill development opportunities, ultimately levelling the playing field and driving inclusive economic growth. Governments and educational institutions should invest in infrastructure that supports online learning and digital education. Programs focusing on coding, data analytics, and digital marketing can equip the workforce with the necessary skills to thrive in a digital economy (Ekuma, 2023).

Moreover, promoting lifelong learning will maximise human capital potential, as Mincer (1974) emphasises. The dynamic nature of today's job market requires individuals to update their skills and knowledge continuously. Organisations can create an environment conducive to professional growth and adaptability by promoting a culture of lifelong learning. This approach contributes to personal development and enhances organisational resilience and competitiveness, particularly in continuously evolving sectors. By promoting lifelong learning, SEA can ensure its workforce remains competitive and adaptable to changing market demands (Shah, 2023).



In addition, incentivising public-private partnerships for skill development, as Becker (1964) suggested, can significantly enhance training programs' effectiveness. Collaborations between government entities, educational institutions, and privatesector businesses will align training initiatives with labour market demands. These partnerships can drive innovation in skill training and ensure that academic programs are relevant and responsive to industry needs, creating a more capable and competitive workforce.

To address the rapidly changing skill requirements in the labour market, educational institutions and training providers should adopt modular education systems and micro-credentialing. These approaches allow learners to acquire specific skills in shorter time frames, making education more accessible and relevant. Spence's signalling theory (1973) supports this notion, suggesting that micro-credentials can signal employers' competence, thereby enhancing employability (Ekuma, 2023). By implementing micro-credentialing, SEA can create a more agile workforce capable of adapting to technological advancements. Besides technical skills, there is a growing recognition of soft skills such as communication, teamwork, and problem-solving. Educational curricula should be revised to incorporate soft skills training, ensuring that graduates are well-rounded and prepared for the complexities of the modern workplace (Shah, 2023).

In conclusion, the strategic investment in skill development, supported by foundational economic theories and innovative educational approaches, is crucial for sustainable economic growth. By enhancing digital infrastructure, promoting lifelong learning, and establishing public-private partnerships, we can cultivate a workforce that is not only prepared to meet current challenges but also equipped to adapt to future opportunities. Embracing these recommendations will ultimately contribute to regional and global economic resilience, ensuring that individuals and communities thrive in a complex and interconnected world. Investing in skill development is paramount for driving economic growth in SEA. Grounded in HCT, the foundational works of economists such as Gary Becker and Theodore Schultz emphasise that human capital investments yield significant returns in productivity and economic advancement. Becker's assertion that education enhances individual productivity and Schultz's focus on the role of education in economic development underscores the necessity of prioritising skill development in the region Phan & Coxhead (2015).

BIBLIOGRAPHY

- [1]. Akinyemi, G. and Abiddin, N. (2013). Human capital developments an interdisciplinary approach for individual, organisation advancement and economic improvement. *Asian Social Science*, 9(4). <https://doi.org/10.5539/ass.v9n4p150>
- [2]. Baker, Gary (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- [3]. Bunnell, T. and Sambamurthy, N. (2022). Re-evaluating the 'good city' from (post)pandemic southeast asia. *International Journal of Built Environment and Sustainability*, 9(2-2), 1-4. <https://doi.org/10.11113/ijbes.v9.n2-2.1007>
- [4]. Crook, T., Todd, S., Combs, J., Woehr, D., & Ketchen, D. (2011). Does human capital matter? a meta-analysis of the relationship between human capital and firm performance.. *Journal of Applied Psychology*, 96(3), 443-456. <https://doi.org/10.1037/a0022147>
- [5]. Ekuma, K. (2023). Rethinking upskilling and reskilling in the age of ai and automation: a fsqca approach.. <https://doi.org/10.20944/preprints202309.0055.v1>
- [6]. ElSayary, A. (2023). The impact of a professional upskilling training programme on developing teachers' digital competence. *Journal of Computer Assisted Learning*, 39(4), 1154-1166. <https://doi.org/10.1111/jcal.12788>
- [7]. Engelhardt, H. and Jann, B. (2004). Halbe kraft voraus? arbeitseinsatz, berufliche segregation und löhne von frauen auf dem schweizer arbeitsmarkt. *Soziale Welt*, 55(2), 205-224. <https://doi.org/10.5771/0038-6073-2004-2-205>
- [8]. Frederiksen, A. and Kato, T. (2017). Human capital and career success: evidence from linked employer-employee data. *The Economic Journal*, 128(613), 1952-1982. <https://doi.org/10.1111/ecoj.12504>
- [9]. Galama, T. and Kippersluis, H. (2015). A theory of education and health.. <https://doi.org/10.7249/wr1094>
- [10]. Gerald, C., Fernandes, F., Sakurada, L., Rasmussen, A., Bennyson, R., Pellegrini, U., ... & Leitão, P. (2021). Co-design process for upskilling the workforce in the factories of the future., 1-6.



- <https://doi.org/10.1109/iecon48115.2021.9589528>
- [11]. Haini, H. (2019). Examining the relationship between finance, institutions and economic growth: evidence from the asean economies. *Economic Change and Restructuring*, 53(4), 519-542. <https://doi.org/10.1007/s10644-019-09257-5>
- [12]. Hong, K. and Songan, P. (2011). Ict in the changing landscape of higher education in southeast asia. *Australasian Journal of Educational Technology*, 27(8). <https://doi.org/10.14742/ajet.893>
- [13]. Kalema, B. and Sigama, K. (2022). Massive open online courses for scalability and transformational culture of learning in corporate organisations. *Ajit-E Online Academic Journal of Information Technology*, 13(50), 123-137. <https://doi.org/10.5824/ajite.2022.03.002.x>
- [14]. Kamran, M. (2015). Investigating the framework for examining the factors influencing vocational education and training (vet) as the crucial factor of self-employment and entrepreneurship development. *Studia I Materiały Wydziału Zarządzania Uw*, 2015(2), 84-94. <https://doi.org/10.7172/1733-9758.2015.19.6>
- [15]. Liu, J., Wang, M., Yang, L., Rahman, S., & Sriboonchitta, S. (2020). Agricultural productivity growth and its determinants in south and southeast asian countries. *Sustainability*, 12(12), 4981. <https://doi.org/10.3390/su12124981>
- [16]. Marginson, S. (2017). Limitations of human capital theory. *Studies in Higher Education*, 44(2), 287-301. <https://doi.org/10.1080/03075079.2017.1359823>
- [17]. Mincer, J. (1974). *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research.
- [18]. Ng, T. and Feldman, D. (2010). Human capital and objective indicators of career success: the mediating effects of cognitive ability and conscientiousness. *Journal of Occupational and Organizational Psychology*, 83(1), 207-235. <https://doi.org/10.1348/096317909x414584>
- [19]. Nirwana, N. (2018). The effect of human capital on regional financial conditions through cultural capital of employees. *International Journal of Law and Management*, 60(4), 965-978. <https://doi.org/10.1108/ijlma-03-2017-0042>
- [20]. Phan, D. and Coxhead, I. (2015). 14. education in southeast asia: investments, achievements, and returns., 75-78. <https://doi.org/10.1355/9789814620628-021>
- [21]. Rađenović, T. (2017). The impact of human capital development on competitiveness., 104-111. <https://doi.org/10.15308/finiz-2017-104-111>
- [22]. Rodokanakis, D. (2021). “human capital theory, matching theory and the greek labour market”. *Journal of Education and Human Development*, 10(1). <https://doi.org/10.15640/jehd.v10n1a6>
- [23]. Salim, A. (2024). Does information and communication technology improve labor productivity? recent evidence from the southeast asian emerging economies. *Growth and Change*, 55(1). <https://doi.org/10.1111/grow.12708>
- [24]. Schultz, T. W. (1961). Investment in Human Capital in *The American Economic Review*, 51(1), 1-17. <https://www.jstor.org/stable/1818907>
- [25]. Shah, N. (2023). Leadership strategies to closing the critical skills gap: a review. *International Journal of Scientific Advances*, 4(5). <https://doi.org/10.51542/ijscia.v4i5.10>
- [26]. Shkoda, T. (2021). Methodology in the modern theory of human capital and strategic management of human capital. *Kwartalnik Ekonomistów I Menedżerów*, 59(1). <https://doi.org/10.33119/eeim.2021.59.8>
- [27]. Spence, M. (1973). Job Market Signaling,in *The Quarterly Journal of Economics*, 87(3), 355-374. <https://doi.org/10.2307/1882010>
- [28]. Ullah, A., Mohamad, S., Hassan, N., & Chatteraj, D. (2019). Global skills deficiency: perspectives of skill mobility in southeast asian countries. *Asian Education and Development Studies*, 8(4), 416-432. <https://doi.org/10.1108/aeds-12-2018-0185>