

Building a brighter future through human capital development insights

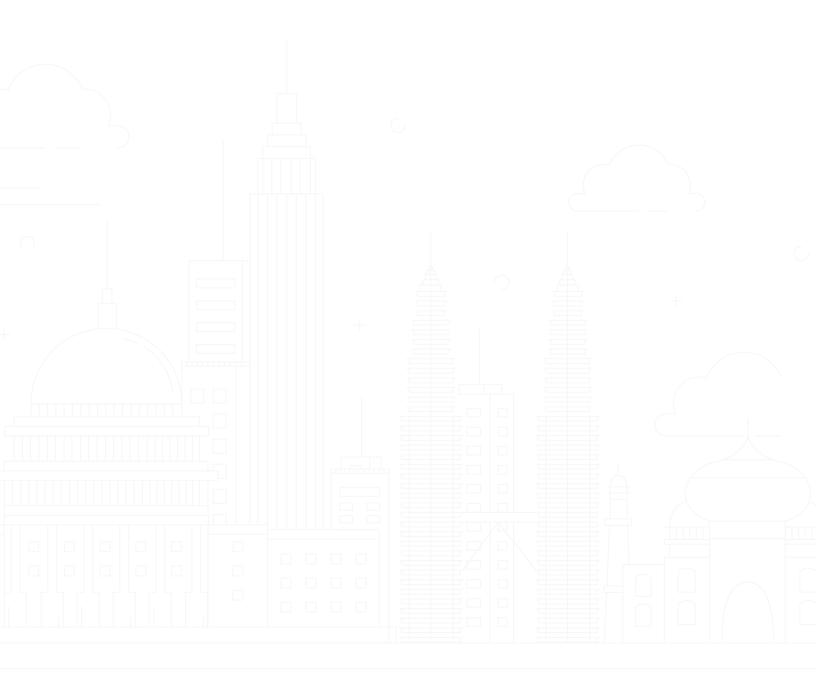






NATIONAL TRAINING INDEX REPORT 2022

Building a brighter future through human capital development insights



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PEMBANGUNAN SUMBER MANUSIA BERHAD

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Prime Minister's Foreword



I strongly believe that the NTI, developed by HRD Corp, and endorsed by the Ministry of Human Resources, will help the government in developing the right policies and initiatives to address the skills and knowledge development needs of all Malaysians.



Our people are the driving force of our Malaysia MADANI aspirations. Without dynamic, passionate and talented Malaysians, we cannot truly embody the core values of MADANI. Values such as Sustainability requires local knowledge and expertise. Prosperity necessitates the quest for knowledge and the celebration of varied perspectives. At the same time, Innovation demands reforming and empowering our human capital to spur the innovative spirit.

No doubt, human capital development is an essential building block to a country's economic progress. This is especially the case for Malaysia today, as we look forward to welcoming more foreign direct investments (FDI) from large multinational tech giants such as Amazon and Tesla while creating a climate of transparency and equity that will ensure no one is left behind.

As we continue our pursuit of progress, we must remember to equip our workforce and talents with the tools to succeed, empower organisations to map out the best way forward for their business, and encourage industries to aspire to greater standards of manpower skills development.

I strongly believe that the National Training Index (NTI), developed by HRD Corp and endorsed by the Ministry of Human Resources, will help Malaysia achieve this and more. The benchmark that the NTI will create will help the government

in developing the right policies and initiatives to address the skills and knowledge development needs of all Malaysians. At the same time, it will help businesses and industries to understand and address current skills development challenges while preparing to embrace future opportunities. This will encourage more public-private- partnerships and spur holistic innovation within the nation's human capital development landscape.

We have set some ambitious goals for the MADANI Economy: Empowering the People initiative, which includes eradicating extreme poverty, improving our global competitiveness ranking and becoming the leading Asian economy. The NTI will be an excellent complementary initiative supporting our human capital development and driving the MADANI Economic fundamentals.

Our strength lies in the diversity, passion and spirit of our Malaysian talents. As we venture into the fast-paced, digital-first future, we must ensure our people are given the information, access and opportunity to develop their skills and knowledge for the long term. Only by doing so can we begin to inculcate the culture of lifelong learning at all levels of society for generations to come.

The NTI is a great start. I look forward to more transformative efforts from the Ministry of Human Resources and HRD Corp as we strive to build an inclusive, harmonious and successful society.

YAB Dato' Seri Anwar Bin Ibrahim Prime Minister

From the Deputy Prime Minister's Desk

The NTI is an excellent effort by HRD Corp and the Ministry of Human Resources, as it will provide comprehensive insight into the state of our nation's training and development efforts and generate perspectives on how we can incorporate TVET programmes and career opportunities within mainstream economic activities.



Lifelong learning and the pursuit of knowledge are not just trendy buzzwords. They are essential for career development and long-term success in the modern workplace. This is something that every Malaysian should embody as we look towards accelerating our economic recovery in line with our ambitious MADANI Economy aspirations.

Lifelong learning goes beyond traditional education and conventional career trajectories. It can also empower Malaysian talents to explore different professional development pathways, such as within the Technical and Vocational Education and Training (TVET) space.

To that end, the Malaysian Government is committed to expanding opportunities within TVET to produce an efficient, skilled workforce that contributes to the country's development and meets the needs of the current job market. Technical and vocational skills are key to developing a quality workforce and increasing productivity in all sectors of the economy. This is important as we continue to embrace the opportunities brought forth by IR4.0 and digitalisation.

The National Training Index (NTI) is an excellent effort by HRD Corp and the Ministry of Human Resources, as it will provide comprehensive insight into the state of our nation's training and development efforts and generate perspectives on how we can incorporate TVET programmes and career opportunities within mainstream economic activities. This is possible as it provides

a comprehensive and holistic measure of a nation's overall training efforts across various

sectors and industries.



I would like to commend the Ministry of Human Resources and HRD Corp for coming up with the National Training Index (NTI) initiative. It demonstrates your proactive approach and steadfast determination in measuring and accelerating the progress of training initiatives nationwide.

Through the comprehensive collection and analysis of data on the current training and development landscape, the NTI can offer invaluable insights that can help shape, strengthen and sustain our human capital development efforts for the long term.

I am confident the NTI will not only be a benchmark that is looked upon by industry players in Malaysia, but it can also set the gold standard in learning and development for our regional counterparts in the future.

YAB Dato' Seri Dr Ahmad Zahid bin Hamidi Deputy Prime Minister

Message from the Minister of Human Resources



I applaud HRD Corp for coming up with the bold and innovative NTI. I strongly believe the NTI will not only set the standards for our workforce, talents and industry players, it will also shape all of Malaysia's human capital development efforts moving forward.



2022 was a year of socioeconomic resurgence for the nation as we work towards strengthening our human capital and driving business recovery. Building future resilience for our workforce and economy is at the core of our efforts. This means putting greater emphasis on mapping value to talent, making the workforce more flexible, and above all, prioritising strategic workforce planning and performance management.

Such efforts are essential in supporting Malaysia's aspirations of becoming a high-income, developed nation. This is because national progress should not be measured by Gross Domestic Product (GDP) alone. Instead, it must grow in tandem with our human capital. This will require greater emphasis on knowledge and skills development programmes for all Malaysians regardless of their background, experience, credentials and industry.

The Ministry of Human Resources (MOHR) is fully committed to ensuring that every Malaysian is given the opportunity to upskill, reskill and multi-skill. At the same time, we are also excited to work with industry players to understand their needs and develop initiatives that will bridge skills gaps and create high-quality training programmes for all Malaysian talents.

While essential, these would not be sustainable or effective without the proper evaluation frameworks and measurement tools in place. Therefore, the National Training Index (NTI) is an excellent effort to address these concerns and ensure that Malaysian individuals and employees are on the right track in their training and development journeys. At the same time, it will also provide employers and industry players with the insights to create the best career paths and training and development roadmaps for their respective industries and organisations.

I applaud HRD Corp for coming up with the bold and innovative NTI. I strongly believe the NTI will not only set the standards for our workforce, talents and industry players, it will also shape all of Malaysia's human capital development efforts moving forward.

Congratulations, HRD Corp, for the introduction of the first NTI. With your passion, dedication and commitment, I am confident that we can look forward to more efforts to elevate Malaysia's workforce and talents to the world stage, in line with our developed nation aspirations.





Message from the Chief Executive



Ultimately, HRD Corp hopes the NTI will set the gold standard for how training and development programmes should be rolled out in the country. Beyond that we also hope the Index will be adopted by industry players in Southeast Asia in the future.



As the custodian of Malaysia's human capital development efforts, HRD Corp has always been committed to ensuring that every Malaysian talent and member of the workforce is given the chance to develop their skills and knowledge. Our levy programme and strategic initiatives have been geared towards providing skills training, placement and income-generation opportunities to all Malaysians. This is because we believe these are the fundamentals that can help them grow personally and professionally.

Beyond that, we work closely with our registered employers, businesses and industry players to ensure they have the right training and development pathways to support their employees' career journeys, all while creating avenues to make it easier for them to invest in their workforce. At the same time, we collaborate with Malaysian trainers and training providers to strengthen the country's training and development ecosystem, ensuring that the training community can offer high-quality, industry-relevant current and future work skills.

Given our far-reaching impact and engagement, HRD Corp regularly receives requests for feedback from individuals, businesses, industries and the Government on the status and potential of Malaysia's skills development landscape. We are also often tapped to provide counsel and recommendations on what industry players can do to address skills gaps within their respective industries and provide relevant and high-quality training programmes for their talents.

This has inspired us to create the National Training Index (NTI), Malaysia's first index to evaluate the relevance and effectiveness of training and development programmes for industry players, businesses and trainees. This first assessment tool-of-its-kind is geared towards providing a holistic overview of the nation's knowledge and skills development efforts for Malaysian talents and working professionals and how this contributes to our human capital development efforts.

While this may be our first NTI report, it won't be our last. HRD Corp aims to garner industry and stakeholder feedback and refine the report further for the future. Ultimately, we hope the NTI will set the gold standard for how training and development programmes should be rolled out in the country. Beyond that, we also hope the Index will be adopted by industry players in Southeast Asia. This is especially important as Malaysia is the first country in the region to adopt a training index of this nature.

Thank you again to the Prime Minister, the Deputy Prime Minister, the Minister of Human Resources and the entire team at the Ministry for your faith in HRD Corp to drive this monumental effort. The NTI is the perfect culmination of our 30th year of serving Malaysia's training and development needs. This achievement has inspired us to continue delivering our programmes and services to the highest levels of transparency and integrity as we strive to bring Malaysian talents to international standards of excellence, not just for today but for decades to come.

YBhg Datuk Wira Shahul Dawood

Chief Executive Human Resource Development Corporation

Overall National Training Index 2022



HRD Corp Registered Employers by Economic Sectors

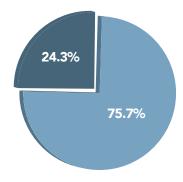
Agriculture, Forestry and Fishing and Construction are newly covered sectors under the expansion of the PSMB Act 2001, effective 1st March 2021.

56,163	15,960	6,800	2,362	421
			The state of the s	
Services	Manufacturing	Construction	Agriculture, Forestry & Fishing	Mining & Quarrying



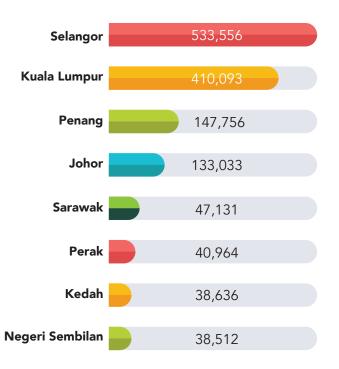
Training Participation in the Year 2022

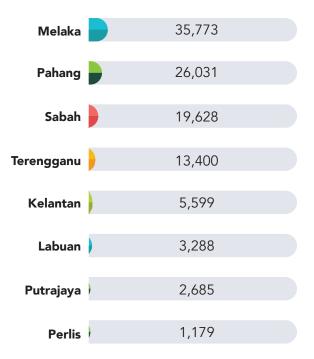
75.7% from Large Enterprise and 24.3% of Small & Medium Enterprise (SME) employees participated in training in 2022



Statistics of Training Places by States

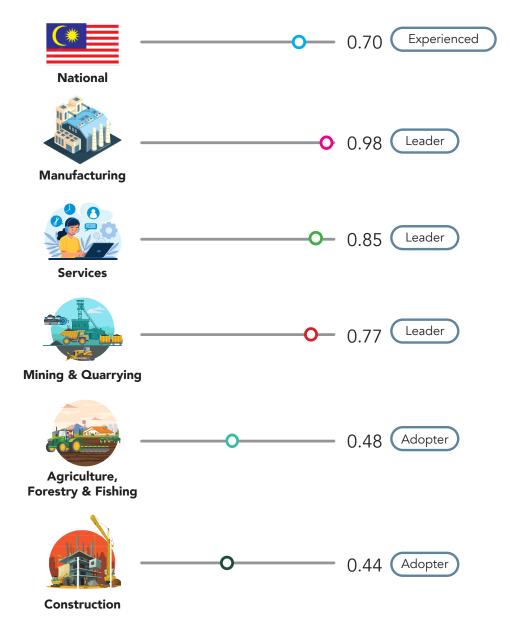
Selangor recorded the highest number of training participation in the year 2022





Overall Index Overview

National Training Index for the year 2022 has proven that the country has an established training system and a strong focus on lifelong learning and skills development with a score of 0.70.



Index score for Construction and Agriculture, Forestry and Fishing were still at "Adopter" category below the National level as both are newly covered sector under the expansion of the PSMB Act 2001.





Building a brighter future through human capital development insights

Executive Summary

The National Training Index (NTI) is an annual assessment comprising a comprehensive analysis of lifelong learning conditions and performances across five (5) primary economic sectors in Malaysia.

The Index provides valuable insights for the Government, investors, and industries to gain an indepth understanding of the current situation and make informed decisions about workforce competency development strategies.

The NTI covers a wide range of training activities and considers various perspectives for a comprehensive analysis of the state of lifelong learning in Malaysia. In this regard, the NTI examines the readiness of employers to invest in employee training and development, the skills development of workers, and the effectiveness of training providers. The data presented in this report were generated from the exhaustive HRD Corp internal database.

Based on the analysis of index performance for the year 2022, Malaysia indicated an established training system and a strong focus on lifelong learning and skills development with a score of 0.70, which indicates Malaysia is at "Experienced" level. The Index also reflects Malaysia's culture of learning and skills development, with many organisations or industries leveraging opportunities to upskill and enhance the competencies of their employees.

As technology and business practices are constantly evolving, it is crucial for organisations in Manufacturing and Services industries to regularly update their employees' skills and knowledge to remain competitive.

The adoption of digital training has been embraced within Malaysia's Manufacturing and Services sectors. In contrast, the Mining & Quarrying, Agriculture and Construction sectors rely primarily on traditional training methods. The results showed that the factors hindering these sectors from adopting digital training are a lack of investment in technology and training resources. The report also addresses challenges in conducting training activities faced by Small and Medium-sized Enterprises (SMEs) and HRD Corp newly registered employers.

Significant challenges include limited financial resources, lack of access to training programmes and limited awareness of available resources.

Therefore, the Government's support is crucial to address these challenges and provide SMEs and newly registered employers with resources and opportunities to invest in employee training and development.

A well-trained and skilled workforce is critical to a competitive and productive economy. To that extent, tracking workforce performance and addressing challenges are essential for the growth and development of Malaysia's economy. Regular tracking of workforce performance enables industries to identify areas of improvement.

Accordingly, collaboration between the Government, industries, and organisations creates a more supportive environment for employee training and development. It can help ensure that the workforce has the skills and knowledge needed to succeed in a rapidly changing global economy.





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Acronyms and Abbreviations

12MP 12th Malaysia Plan

4IR Fourth Industrial Revolution **ALO** Arab Labour Organisation ΑI Artificial Intelligence

ASEAN Association of Southeast Asian Nations

BNM Bank Negara Malaysia CLI Composite Learning Index COVID-19 Coronavirus Disease 2019

DOSM Department of Statistics Malaysia EDI Education for All Development Index

E&E **Electrical and Electronics EPU** Economic Planning Unit

ESG Environmental, Social and Governance

ESI European Skills Index

ELLI European Lifelong Learning Index

CEDEFOP European Centre for the Development of Vocational Training

CIDB Construction Industry Development Board

FMI Fails Management Institute

FeMAC Federation of JPK Accredited Centres Malaysia

FMM Federation of Malaysian Manufacturers

GKI Global Knowledge Index

GTCI Global Talent Competitiveness Index

GDP Gross Domestic Product HDI Human Development Index

HRD Corp Human Resource Development Corporation

HAI Human Assets Index

International Labour Organisation ILO

ISO International Organisation for Standardisation

IoT Internet of Things

MARA

IPI Industrial Production Index

JPK Jabatan Pembangunan Kemahiran

JTM Jabatan Tenaga Manusia KRI Khazanah Research Institute **LDCI** Linked Data Competency Index LPI Labour Productivity Index

Majlis Amanah Rakyat **MDEC** Malaysia Digital Economy Corporation MEF Malaysian Employers Federation



Acronyms and Abbreviations

M&E Machinery and Equipment

MASCO Malaysia Standard Classification of Occupations

MIGHT Malaysian Industry-Government Group for High Technology

MIDA Malaysian Investment Development Authority

MOHE Ministry of Higher Education
MPC Malaysia Productivity Corporation
MOHR Ministry of Human Resources
MQA Malaysian Qualification Agency

MSIC Malaysia Standard Industrial Classification

MyWI Malaysian Well-being Index
NTI National Training Index

OECD Organisation for Economic Co-operation and Development

OLI Online Labour Index

Productive Capacities Index PCI PPP Purchasing Power Parity PPP1 Public-private Partnership **PwC** PricewaterhouseCoopers **RPL** Recognition of Prior Learning **SME** Small and Medium Enterprise **SME Corp** SME Corporation Malaysia **TWI** Total Workforce Index

TVET Technical and Vocational Education and Training

INSEAD European Institute of Business Administration (Institut Européen d'Administration des Affaires)

UTM Universiti Teknologi Malaysia

UNCTAD United Nations Conference on Trade and Development
UNCDP United Nations Committee for Development Policy

UNDP United Nations Development Programme

UNESCO United Nations Educational, Scientific and Cultural Organisation

UPM Universiti Putra MalaysiaWBG World Bank GroupWEF World Economic Forum

WISE World Indicators of Skills for Employment

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Contributions and Acknowledgements

The National Training Index (NTI) was developed with great support from 19 expert entities, including Government Agencies, Research Organisations, Research Universities and Industry Representatives. The contribution and commitment throughout a series of workshops and engagements to establish the NTI framework were the diligent efforts of the experts in each field to achieve the goal of creating a tool that could measure the effectiveness of training and lifelong learning activities across various economic sectors within Malaysia.

With that, the HRD Corp is pleased to acknowledge and thank the following organisations for their contributions to the development of the NTI, without which the realisation of the **NTI Report First Edition 2023** would not have been feasible.



The Ministry of Human Resources (MOHR) is a ministry of the Government of Malaysia responsible for skills development, labour, occupational safety and health, trade unions, industrial relations, industrial court, labour market information and analysis, and social security.



The Ministry of Higher Education's (MoHE)'s integral role is to create a higher education ecosystem with the finest Public Universities (UA), Private Higher Educational Institutions (PHEIs), Polytechnics and Community Colleges. These institutions are the main components in the national education ecosystem and training to generate first-rate thinkers, scholars, and skilled and semi-skilled workforce.



The Economic Planning Unit (EPU) under the Prime Minister's Office is responsible for formulating medium and long-term socioeconomic development plans at the national, regional and state levels, conducting socioeconomic research, and advising the Government on socioeconomic affairs.



The Department of Statistics Malaysia (DOSM) is a premier government agency entrusted with the responsibility to collect, interpret and disseminate the latest and real-time statistics in monitoring national economic performance and social development.



Jabatan Tenaga Manusia (JTM) is one of the country's foremost providers of skills training programmes. The Manpower Department's training programmes range from craft skills to advanced technical level certification to meet the demands for skilled labour and changes brought about by the rapid advancements in Science and Technology.





The Malaysian Qualifications Agency (MQA) is a statutory body set up under the Malaysian Qualifications Agency Act 2007 to implement and update the Malaysian Qualifications Framework, accrediting higher education programmes and monitoring the quality and standard of higher education providers.



The Malaysia Productivity Corporation (MPC) (formerly National Productivity Corporation) was established in 1962 as a joint venture project between the Federal Government and the United Nations Special Fund. The establishment of this corporation aims to create local experts in the fields of productivity, quality, management, and entrepreneurship.



The Malaysia Digital Economy Corporation (MDEC), a government agency under the purview of the Ministry of Communications and Digital, was established in 1996 to lead the digital transformation of the economy.



The Institute of Labour Market Information and Analysis (ILMIA) is a national centre of excellence under the direct purview of the Department of Statistics Malaysia (DOSM) for the analysis of labour market trends and emerging human capital issues which contributes to better human capital planning and effective formulation of labour market policies.



The Malaysian Industry-Government Group for High Technology (MIGHT) is an independent non-profit technology think-tank under the purview of the Prime Minister's Department. MIGHT is tasked to help drive the advancement of high technology competency and capacity in Malaysia.



The Malaysian Employers Federation (MEF) is the central organisation of private sector employers in Malaysia recognised nationally, regionally and internationally. Established in 1959, MEF promotes and safeguards the rights and interests of employers by providing a forum for consultation and discussion among members on matters of common interest. The organisation also advocates sound principles and best practices of human resource and industrial relations through information, advice, research and information, training and other activities.



The Federation of Malaysian Manufacturers (FMM) is Malaysia's premier economic organisation. Since its establishment in 1968, FMM has consistently led Malaysian manufacturers in spearheading the nation's growth and modernisation.





The Federation of JPK Accredited Centres Malaysia (FeMAC) exists as a body to be the face and voice of all accredited training providers in Malaysia on matters concerning training and development. Its mission is to champion the cause of its members and enhance their abilities. The organisation strives to be effective through public and private partnerships to help realise the 2020 vision of a developed Malaysia.



Jabatan Pembangunan Kemahiran, or the Department of Skills Development (DSD), is an agency under the Ministry of Human Resources for coordination, control, and implementation of skills training to produce knowledge workers for employment and recognition at national and international levels.



Majlis Amanah Rakyat (MARA), or the Council of Trust for the People, is an agency under the purview of the Ministry of Regional and Rural Development established as a corporate statutory body that holds the responsibility to develop, encourage, facilitate, and implement socioeconomic development with a focus on the rural area.



The SME Corporation Malaysia (SME Corp Malaysia) is the central coordinating agency (CCA) under the Ministry of Entrepreneur & Cooperatives Development (MECD) that coordinates the implementation of development programmes for small and medium enterprises (SMEs) across all related Ministries and agencies. It acts as the central point of reference for research and data dissemination on SMEs and entrepreneurs and provides business advisory services for SMEs and entrepreneurs throughout the country.



The Khazanah Research Institute (KRI) is a not-for-profit organisation that researches the nation's pressing issues and recommends policies to improve the well-being of Malaysians.

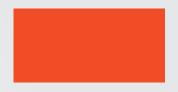


Universiti Teknologi Malaysia (UTM) is regarded as the country's premier institution in engineering, science and technology, ranked in the top 100 in the World University QS Rankings in engineering and technology. Its medium of instruction is English.



Universiti Putra Malaysia (UPM) is a leading research university in Malaysia located in Serdang, next to Malaysia's administrative capital city, Putrajaya. As a world-renowned learning and research centre, UPM has attracted students and staff worldwide, making it a well-respected global entity.





NATIONAL TRAINING TASK-**FORCE**

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Malaysia's Current Economic Performance

The Index scoring used in measuring the training and development in Malaysia through the NTI aims to relate the trends in the findings with the current local economic situation.

Global Performance and Outlook

The year 2022 began with the recovery of the global economy, which has remained modest amidst volatile economic, geopolitical and ecological changes. In addition, growth in several ASEAN economies was lifted by base effects from lockdowns imposed in the same period in 2021.

Citing World Bank's Malaysia Economic Monitor: Expanding Malaysia's Digital Frontier (2023), global growth is projected to decelerate to 1.7% in 2023 (2022e: 2.9%) amidst synchronous policy tightening, worsening financial conditions, and continued disruptions from Russia's invasion of Ukraine.

Malaysia's Economic Performance 2022

All economic sectors expanded in 2022, with the Services sector strengthened by 10.9% (2021: 1.9%), supported by consumer-related subsectors' continued recovery. The Manufacturing sector grew by 8.1% (2021: 9.5%) as global and domestic demand bolstered the sector, paired with robust production activity. The Construction sector expanded by 5.0% (2021: -5.2%) following a broad-based pickup in activities across all subsectors. Growth in the Mining & Quarrying sector rose 3.4% (2021: 0.3%), attributable to the operationalisation of the new gas field located in offshore East Malaysia since March 2022 and the ramp-up in PETRONAS Floating Liquefied Natural Gas-2 production. In contrast, the Agriculture sector grew 0.1% (2021: -0.2%), underpinned by growth in oil palm output, as harvesting activities improved following the re-entry of migrant workers to the plantation sector.

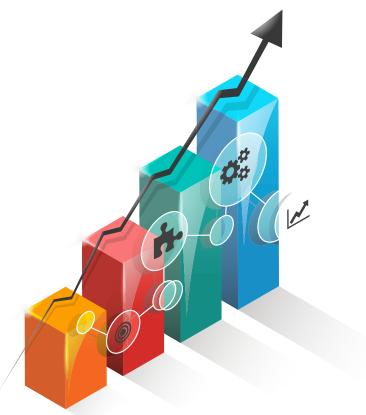
In addition, Bank Negara Malaysia's (BNM) Economic, Monetary and Financial Developments in 2022 stated that consumer spending was robust, reflecting pentup demand and improved labour market conditions.

On the domestic front, the upliftment of the Coronavirus containment measures led to a broad-based improvement in economic growth. The country achieved the highest growth rate in the past 22 years, with the annual Gross Domestic Production (GDP) at 8.7% in 2022 (2021: 3.1%).

Malaysia's Economic Outlook 2023

HRD Corp remains focused on sustainable economic recovery in 2023. A more competitive global environment creates urgency for Malaysia to transition to a high-value-added, high-income economy.

Malaysia's GDP is projected to grow moderately between 4.0% and 5.0% in 2023 (2022: 8.7%), supported by firm domestic demands, underpinned by improvements in employment and income levels, continued implementation of multi-year investment projects and higher tourism activities. (Economic, Monetary and Financial Developments in 2022, BNM).





Human Capital Development Landscape in Malaysia



As our country moves into the endemic phase, the world faces formidable challenges in developing the economy and workforce skills. Human capital becomes a significant concern as the workforce's knowledge, skills, and abilities are essential to economic growth and development. Even though the BNM (2022) projected Malaysia to grow moderately in 2023, the World Bank Group (WBG) predicts that 2023 will be a challenging year for the global economy, with a high chance of a recession. In this regard, Malaysia must invest more in the education and training of the workforce to enhance human capital development to withstand major economic setbacks despite the increase in skilled workers and lower unemployment rates.

Since the COVID-19 pandemic in 2020, Malaysia's labour market has recovered remarkably after two challenging years. In Q4 2022, the number of employed workers was 15,940,000 and 600,500 were unemployed. The unemployment rate decreased to 3.6%, indicating increased job market activities. However, there was a slight increase in the percentage of underemployed people, especially those whose skills are not utilised in their work, to 37.4% (1,891,400). More jobs were created during this quarter, with a 3.8% increase compared to the previous year.

The economy created jobs at a stable rate of 2.6% (8,750,000) in the last few months of 2022. Most of these jobs were in the Services and Manufacturing sectors, with 51.8% (4,530,000) and 27.5% (2,410,000) jobs, respectively. Construction accounted for 14.3% (1,251,000) of jobs, while Agriculture, Mining & Quarrying accounted for 5.5% (480,000) and 0.9% (80,000) of jobs, respectively. The Services sector remained the biggest employer, especially in Wholesale and Retail Trade, Catering, Transport and Storage. However, Agriculture, Mining & Quarrying industries accounted for lesser jobs.

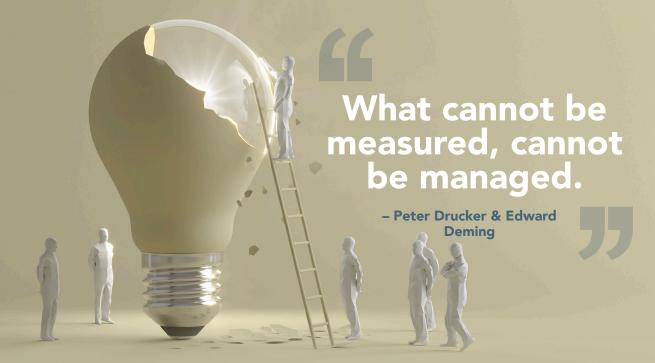
Most jobs created were for semi-skilled people, accounting for 62.3% of job demand or 5,350,000 jobs. The highly-skilled category accounted for 24.9% (2,131,000) of job demand. Meanwhile, only 12.6% of jobs were for low-skilled workers due to businesses with increased use of digital technology, such as Al, Big Data and IoT. With emerging trends in digital

technology, there will be more jobs for skilled workers and fewer for low-skilled workers.

Therefore, investing in workforce education and training is essential to support the country's growth plans in line with the fourth industrial revolution. Despite government policies and strategies to create a more inclusive and sustainable labour market, some challenges still need to be addressed, such as differences in the quality of education and gaps between workers' skills and job market demands. Due to Malaysia's growing ageing population, the future workforce may decline, lowering productivity. Accordingly, industries must continue investing in human capital development to maintain economic growth and competitiveness through greater access to education and skills training to address imbalances in the labour market.



Measure of Improvement



According to psychology experts Anastasi and Urbina (1997), measurement involves assigning numbers to objects or events' characteristics based on rules. Understanding the meaning of measurement in a specific context is essential to achieve a complete and substantial result. Measurement is crucial for decision-making, as it objectively evaluates different options enabling informed decisions. By eliminating subjectivity and bias, decision-makers can select the best choice based on objectives and criteria. It also plays a crucial role in performance tracking, ensuring that decisions are flexible to respond to changing circumstances.

Measurement also determines the effectiveness and success of a training programme. The data is beneficial to make adjustments for the efficient use of training resources and to illustrate the impact of training on organisational goals. In addition, measurement serves as a means of communication. It helps decision-makers present their findings to stakeholders, shareholders and the public, thereby increasing transparency, accountability, and decisions in the best interests of all parties.

Decision-makers can make more informed decisions based on evidence rather than assumptions using data to measure outcomes leading to more accurate and reliable long-term decisions. Furthermore, measurement helps decision-makers track the performance of a decision over time and make changes if necessary to achieve goals. This way, decision-making is adaptable to changing circumstances for continued success.

Recent developments have focused on using data-driven approaches to measure indicators to make crucial decisions, particularly human capital development. For example, the European Skills Index (ESI) and the World Indicators of Skills for Employment (WISE) are leading examples of data-driven approaches to achieving practical outcomes for better human capital development, such as measuring the performance of skills systems and development.

In conclusion, measurement is critical for decision-making, offering a systematic and objective means of evaluating different options, facilitating comparability, enabling performance tracking, promoting evidence-based decision-making and serving as a means of communication. A comprehensive framework of measuring human capital training and development indices ensures appropriate and constructive decisions for future economic growth.

The Need for an Index

An index is a powerful tool widely used to measure global performance and productivity in various disciplines, such as economy, management, computer science, environment, social, business, and education.

In management, an index is used to measure the productivity and performance of an organisation. According to Peterson et al. (2003), the primary emphasis of the organisational performance concept is the capacity of the organisation to effectively employ the resources at its disposal to accomplish goals compatible with the organisation's established objectives. The relevance of such goals to the organisation's users is also considered.

For instance, one of the most commonly used indices related to human capital is the Labour Productivity Index (LPI). This Index identifies trends in labour productivity within a sector and demonstrates changes to the country's economic performance. The Department of Statistics Malaysia (DOSM)

defines the LPI as an indicator that measures the efficiency of inputs used to generate output in each period. The LPI is calculated as the output index (goods and services) ratio to the input index (employees or total hours worked).

In summary, it is vital to measure and evaluate the performance and effectiveness of training provided by the HRD Corp to ensure that the organisation stays on the right track and achieves its goals. An index is the best tool for this purpose, serving as an economic indicator for global and national economies. The Government and industry players rely heavily on the index to establish economic policies, refine international trade and assess monetary value fluctuations.



National and International Index Benchmarking





From a national and international perspective, human capital effectiveness is analysed through index-related training and development measurement. Based on benchmarking standards, there needs to be a comprehensive index framework for measuring the upskilling and reskilling participation of the workforce.

MALAYSIA

Malaysia has developed several comprehensive indices in an attempt to assess our country's human capital development in various categories such as socioeconomics, wages and salary, and productivity, as follows:

Socioeconomics

The Malaysia Well-being Index (MyWI) is an index developed to measure the level of well-being among Malaysians from an economic and social perspective. This Index indicates the impact of well-being among Malaysians on the current economic situation. It comprises two sub-composites: the economic well-being sub-composite and social well-being sub-composite, across 14 indicators.

Source: Malaysia Well-being Index (MyWI), Department of Statistics Malaysia (DOSM)

Wages and Salary

Index development in this category aims to illustrate the changes in wages and salaries of jobs and occupations in the Malaysian labour market over time. The National Wages Index initiated by the Institute of Labour Market Information and Analysis (ILMIA) enables employers and job seekers to compare wage changes to broader labour market trends and evaluate compensation growth over career path changes.

Source: National Wage Index, Institute of Labour Market Information and Analysis (ILMIA), Malaysia

Productivity

Productivity is a crucial economic indicator for analysing how changes in labour productivity affect different industries and economic growth. Labour productivity is measured as the performance output per worker or hour worked. The main factors impacting productivity are human capital development, such as workers' skills, technological changes, management practices and other inputs such as capital.

Source: Labour Productivity Index, Malaysia Productivity Corporation (MPC)



INTERNATIONAL

At the international level, there are indices related to lifelong learning focusing on skilled proficiency, education and other behavioural aspects that impact a country's economy. However, an index has yet to be developed to measure upskilling and reskilling participation in the workforce. The findings of the benchmarking study related to the establishment of indices across seven (7) key areas are as follows:

Economy

Index development under this category emphasises a country's productiveness in leveraging its resources for health, education, income, skills and demand and supply. Such indices enable the Government and industry players to evaluate economic development and help identify economic gaps and limitations hindering efforts to foster productive capacities and structural transformation.

 Table 1

 International Benchmarking Index on Economy

Index	Country
Global Competitiveness Index 4.0	Switzerland
Human Development Index (HDI)	United States
Online Labour Index (OLI)	United Kingdom
Productive Capacities Index (PCI)	Switzerland

Sources:

- Global Competitiveness Index 4.0, World Economic Forum (WEF), Switzerland.
- Human Development Index (HDI), United Nations Development Programme (UNDP), United States.
- Online Labour Index (OLI), International Labour Organisation (ILO) and Oxford University, United Kingdom.
- Productive Capacities Index (PCI), United Nations Conference on Trade and Development (UNCTAD), Geneva, Switzerland.

Socioeconomics

A country's social and economic progress is typically measured within four (4) fundamental areas: environmental sustainability, increased wellbeing, reduced inequality and system resilience. For example, the Better Life Index framework developed by the Organisation for Economic Co-operation

and Development (OECD) measures well-being, environmental quality, quality of public services and security.

Source: Better Life Index, Organisation for Economic Cooperation and Development (OECD), France

Training & Skills Development

The European Skills Index (ESI) is a composite indicator measuring the performance of EU skills systems developed by the European Centre for the Development of Vocational Training (CEDEFOP). The Index indicates the degree of success and performance of education, training, and labour market activities in skills development. The ESI measures European countries' performance across three (3) main pillars: skills development, activation and matching.

Source: European Skills Index (ESI), European Centre for the Development of Vocational Training (CEDEFOP), United Kingdom

Skills Enhancement

In this category, the indices measure the progress of a country through investment and mobilisation of human capital in terms of knowledge, education, health and trends that impact skilled labour markets. The measurements highlight how improvements in health and education outcomes facilitate workers' productivity and the challenges faced in the demand and supply of highly skilled workforce based on education, wage pressure and labour market participation.



 Table 2

 International Benchmarking Index on Skills Enhancement

Index	Country
Human Capital Index (HCI)	United States
Global Skills Index	United Arab Emirates, Saudi Arabia

Sources:

- Human Capital Index (HCI), World Bank Group (WBG), United States.
- 2. Global Skills Index, Hays Group, Dubai, Saudi Arabia.

Competency

Indices on competencies are essential for measuring individual or group skills, knowledge and abilities. It is an effective way of evaluating the readiness of individuals and organisations to perform their respective roles efficiently. Generally, the indices measure global talent competitiveness and assess how skills proficiency, education, and other behavioural aspects impact a country's economic performance. The table below shows several indices developed from various regions to measure human capital performance and efficiency.

 Table 3

 International Benchmarking Index on Competencies

Index	Country
Global Talent Competitiveness Index (GTCI)	Europe
Total Workforce Index (TWI)	Thailand
Women in Work Index	Indonesia
Coursera's Global Skills Index	United States
Linked Data Competency Index (LDCI)	United States

Sources:

- Global Talent Competitiveness Index (GTCI), European Institute of Business Administration (INSEAD), Cedex, Europe.
- 2. Total Workforce Index (TWI), Talent Solutions ManpowerGroup, Thailand.
- Women in Work Index, PricewaterhouseCoopers (PwC), Indonesia.
- 4. Coursera's Global Skills Index, Coursera, United States.
- Linked Data Competency Index (LDCI), University of Washington Information School, United States.

Education and Training

The development of various measurements is essential in identifying a country's educational performance at multiple levels. These measurements include adult and youth literacy skills, formal and informal education, training participation rates, post-secondary education participation, university attainment, TVET education, and high school dropout rates. The indices measure individual literacy levels from an educational perspective, providing a comprehensive view of a country's educational system, including its strengths and weaknesses.

Such indices offer numerous outcomes that significantly improve education, from TVET education in developing workforce skills to socioeconomic development based on learning conditions. This metric is essential in identifying gaps in the system and developing strategies to overcome the challenges in education and skills training.

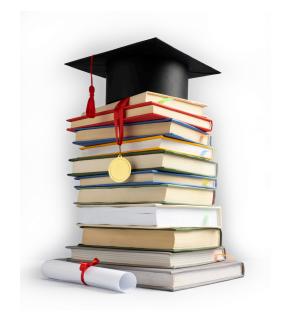


Table 4International Benchmarking Index on Education and Training

Index	Country
Global Knowledge Index (GKI)	United States
Human Assets Index (HAI)	France
Education for All Index (EDI)	France
Technical and Vocational Education and Training (TVET) Index	Arab Countries
Composite Learning Index (CLI)	Canada
European Lifelong Learning Index (ELLI)	Germany

In summary, human capital development can be measured through various indicators. Crucial components that need to be addressed in the index metrics include training participation in the labour market, organisational commitment or readiness in human capital development, and the effectiveness of training providers. These metrics will help identify gaps in providing in-demand skills across various industries and measure workforce training participation and performance. As such, a comprehensive index that monitors workforce training and development will increase labour productivity towards achieving a high-income nation status with highly skilled workers.

Sources:

- 1. Global Knowledge Index (GKI), United Nations Development Programme (UNDP), United States.
- Human Assets Index (HAI), United Nations Committee for Development Policy (UNCDP), France.
- 3. Education for All Index (EDI), United Nations Educational, Scientific and Cultural Organisation (UNESCO), France.
- Technical and Vocational Education and Training (TVET) Index, United Nations Educational, Scientific and Cultural Organisation (UNESCO) and Arab Labour Organisation (ALO), Cairo, Egypt.
- Composite Learning Index (CLI), Canadian Council on Learning.
- 6. European Lifelong Learning Index (ELLI), Bertelsmann Stiftung, Germany.

Productivity

The Labour Productivity Index (LPI) is a fundamental indicator of a country's economic growth, competitiveness and living standards. From a global perspective, critical productivity components include employment, population, GDP and Purchasing Power Parity (PPP). The LPI also constitutes excerpts from various data sources, such as the International Labour Organisation (ILO), United Nations Population Division, Eurostat, Organisation for Economic Cooperation and Development (OECD) and the World Bank Group (WBG).

Source: Labour Productivity Index, World Bank Group (WBG), United States





THE MATIONAL TRAINED EX

Development of the National Training Index (NTI) Framework

Based on the desktop research study conducted under the part on National and International Index Benchmarking, Malaysia has no comprehensive index to measure lifelong learning. Training and lifelong learning in the country involves various organisations, making it a challenging task to define, isolate, measure and analyse the country's progress in lifelong learning.

Human Capital development through lifelong learning is being promoted in response to the forces of globalisation and the imperative to increase the percentage of skilled workers in Malaysia. Crucial questions for the Government and industry players to know more about the performance of lifelong learning include, how much lifelong learning is taking place in Malaysia? Of what type and where? Is this the right amount and type of lifelong learning? Do we need more or less of certain types of lifelong learning? Answering these questions presumes the ability to measure the performance of the current state of lifelong learning.

While there is a plethora of indicators that describe the performance of learning in Malaysia, none of them individually suffices to measure the intangible concept of lifelong learning. However, a single summary measure of lifelong learning makes it possible to assess whether things are improving.

The Government and industry players will be able to monitor a single index number rather than various indicators for strategic policy formulation.

A comprehensive indicator also makes comparing trends over time and across industries easier. Such an indicator facilitates the measurement of training and development among organisations in Malaysia and the global arena, encouraging every country to assess economic development through lifelong learning.

Recently, the scope of the PSMB Act 2001 has been expanded to include all industries, bringing the conduct of all skills training under the purview of the HRD Corp. As a result, the HRD Corp has become one of the primary agencies responsible for in-service workers' learning and development in Malaysia.

Therefore, the HRD Corp, in collaboration with 19 expert bodies comprising the Government, Agencies, Research Organisations, Research Universities and Industry Representatives, has formed committees to develop an index called the National Training Index (NTI) to assess the performance of training or lifelong learning activities in five (5) leading Economic Sectors in Malaysia and also one index number at the national level.





About the National Training Index (NTI)



Recognising the value of indices, particularly in gauging the efficiency and relevancy of training initiatives among the current workforce, the HRD Corp has established a comprehensive training index framework that considers the training and development performance across Malaysia's five (5) primary economic sectors. The development of this index measurement framework enables organisations to compare training participation rates and identify areas for improvement to achieve desired outcomes. Since the inception of the HRD Corp, there have been no comprehensive and substantive evaluations to measure the effectiveness and performance of training and development in Malaysia. Therefore,

there is an urgent need to formulate and develop a comprehensive measure to monitor the performance of lifelong learning activities.

The primary objective of the NTI is to measure the level of training development capacity and commitment of employers in Malaysia. The Index serves as a guide for structuring and building a strategic plan to create a sustainable workforce. It also serves as an indicator for tracking progress and understanding the impact of training development on workforce skills and productivity. Thus, it can assist various industries in refining and improving training activities to align with organisational goals.

As a comprehensive measure of training participation, the NTI considers various factors influencing training effectiveness. Key factors considered in calculating the training index include the number of employees who acquired training, the type of training (e.g., physical or virtual) and the improvement in employee skills and performance resulting from the training. By considering various relevant factors, employers can make informed decisions that lead to more efficient and effective training programmes, ultimately benefiting employees and the organisation.

Organisations can gain valuable insights into the impact of training programmes through data-driven decision-making. By identifying areas for development, organisations can allot resources more efficiently to enhance the efficiency and efficacy of training programmes. In short, the NTI is a robust and comprehensive approach for organisations to evaluate the effectiveness of training and development programmes.

In addition, resources and expertise are crucial for accurately measuring improvement. Resources refer to tools, technologies and support systems needed to collect and analyse data, calculate the training index expertise refers to the skills and knowledge of the people responsible for designing and implementing training programmes and those responsible for analysing and interpreting the data. By using the right resources and expertise, organisations can ensure they have the necessary tools and knowledge to ascertain the impact of their training programmes.

and track progress over time. On the other hand,

As a pioneer in Malaysia's efforts to enhance human capital, particularly in learning and development, the HRD Corp has a wealth of resources and skills that enable it to engage in pertinent discussions about the future of training and development in Malaysia. Ensuring the training and development landscape becomes more efficient and sustainable is paramount. The deliberate and urgent human capital development will determine Malaysia's future economic growth. Therefore, empowering our workforce is crucial towards achieving the goal of a developed nation.

With rapid globalisation and the world economy becoming more focused on knowledge and skills, lifelong learning is one of the dominant factors in deciding the success and sustainability of the workforce and nations.

To that extent, the NTI introduces a new perspective on monitoring lifelong learning or the performance of training activities based on the HRD Corp data. The extensive database utilised in developing the NTI highlights the current lifelong learning performance focusing on three (3) significant dimensions: Firm Preparedness, Workers Skill Development and Training Providers Effectiveness.

The close collaboration with public and private entities, including research-based organisations and industry representatives, has enabled a better understanding of workforce training participation and lifelong learning for formulating the NTI to enhance human capital development in Malaysia.



ASPIRATIONS OF THE NATIONAL TRAINING INDEX (NTI) REPORT

The NTI report will be published annually, with 2022 as a baseline. The report provides a strategic benchmarking tool for organisations and Governments to develop human capital policy. By allowing cross-organisation comparison in training performance, the report helps shape human capital development strategies and monitor training performance in public and private sector organisations over time and across industries.

THE NATIONAL TRAINING INDEX (NTI) FRAMEWORK

To provide an overall view of training and development in Malaysia under the NTI, 19 indicators from three (3) main interconnected dimensions were selected.

Table 5National Training Index (NTI) Framework

Key Dimension

Description

Firm Preparedness / Readiness / Commitment



Seven (7) indicators were identified to assess firm preparedness, which measures employers' readiness or availability towards workers' upskilling and reskilling in terms of allocation, the number of workers participating in training, recognition after training, and facility or training support for learning.

Worker Skills Development



Four (4) indicators were identified to assess the skills development dimension, which measures workers' competencies and skills, e.g., the level of certification, duration of the training, types of training skills and the skills transferable to the workplace.

Training Provider Effectiveness



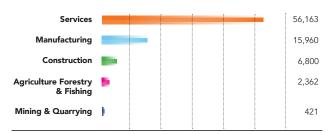
Eight (8) indicators were identified to assess training providers' effectiveness, which measures training providers' quality and availability to support the learning ecosystem from the perspectives of course content, digital training platform, issuance of certification, trainers' competency and training facilities.

Outlook on HRD Corp Registered Employers

With its role as a catalyst in training and development, HRD Corp is in a prime position with an extensive database on training and development among sectors in Malaysia to perform the index measurement through the NTI. In 2022 alone, the number of HRD Corp registered employers increased to 81,706, recording a growth rate of 21.7% from 67,125 in 2021. The rise in registered employers is in line with the expansion of the PSMB Act 2001 on March 1, 2021. The HRD Corp's coverage has widened from 63 to 238 subsectors across five (5) leading economic sectors. The Services sector had the most significant number of registered employers, with 56,163 comprising 5,490 (9.8%) Large Enterprise Employers and 50,673 (90.2%) SME Employers. The Mining & Quarrying sector recorded the lowest number of registered employers, with only 421. In contrast, newly registered employers in the Construction of Buildings subsector recorded the most significant number, with 696, followed by Restaurant and Mobile Food Service Activities and Wholesale of Household Goods, with 665 and 609, respectively.

The number of registered employers rose to 21.7% in the Year 2022.

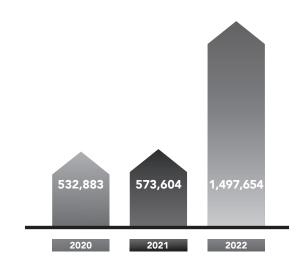
Figure 1
HRD Corp Registered Employers According to Primary Economic Sectors



As Malaysia transitioned to the endemic phase on April 1, 2022, economic activities resumed with 100% use of space capacity. The changes led to a 161.0% increase in approved training participants, exceeding the 1 million mark to record 1,497,264 in 2022. In terms of training participation by State, Selangor recorded the most significant number at 35.6%, with 533,556. Meanwhile, Perlis had the least approved training participation at 0.1%, with only 1,179.

The year 2022 recorded the highest approved training participation in the past 29 years since the inception of the HRD Corp.

Figure 2Comparison of Training Participation for the Year 2020 – 2022



In 2022, the number of trainees trained increased by 152.1% compared to 2021, reaching a record high of 879,165. Employers from 212 out of the 238 subsectors actively trained their employees. The subsectors with the highest number of trainees trained were:

- Manufacture of Electric Motors, Generators, Transformers and Electricity Distribution and Control Apparatus;
- 2) Monetary Intermediation;
- 3) Processing and Preserving of Meat;
- 4) Architectural and Engineering Activities and Related Technical Consultancy; and
- 5) Manufacture of Basic Chemicals, Fertilisers and Nitrogen Compounds, Plastics and Synthetic Rubber in Primary Forms.

Furthermore, 75.7% of employees from Large Enterprises and 24.3% from SMEs participated in upskilling and reskilling programmes to enhance their productivity and knowledge throughout the year.



The National Training Index (NTI) Measurement Methodology

Transparency to stakeholders is essential for effective composite indicators (OECD, 2008). Therefore, a robust assessment requires a solid understanding of the NTI measurement methodology.

Data Collection

The NTI is a geometric means of normalised indices for three (3) key dimensions: Firm Preparedness, Worker Skills Development and Training Provider Effectiveness at four (4) levels, namely, national, main economic sectors, subsectors and individual employers.

The Index combines 19 indicators from the HRD Corp internal database to reflect a wide range of lifelong learning activities, such as training expenditure, training participation, skill areas, types of certifications, and training mode. In particular, the data is based on approved training grant applications by 81,706 HRD Corp registered employers in five (5) leading economic sectors comprising 238 subsectors throughout 2022. The dataset represents a unique source of the training performance of each registered employer.

Data Quality

Overall, the NTI scores ultimately reflect the accuracy and availability of the data used. Similar to other established composite indices and statistical indicators, there are limitations to the NTI. The available data is severely limited for specific indicators.

Data Processing and Analysis

A multi-modelling approach was applied to calculate the Index for robustness analysis. The overall NTI score is computed through successive aggregations of indicators using score item calculation through three (3) stages:

- Normalisation method,
- Weighting method, and
- Aggregation formula.

Each indicator's dimensions were determined before setting the scoring weightage to differentiate each performance. A mixture of weighted arithmetic and geometric means were used at different levels of the Index.





Weightage

Due to the different degrees of correlation between indicators and the Index, the NTI expert committees decided that assigning equal weightage to all indicators would not be satisfactory from a methodological point of view. For a meaningful interpretation of the index score for training performance, the weightage was set within the three (3) vital dimensions. The expert committee members agreed to put a higher weightage on Worker Skills Development with a total weightage of 40%, followed by Firm Preparedness at 30% and Training Provider Effectiveness at 30%. Worker Skills Development was selected as the most significant dimension for index computation.

Index Score Category

The evaluation of the NTI scale of 0 to 1 were ranked into four (4) categories, namely: i) Leader, ii) Experienced, iii) Adopter and iv) Beginner. Each rank index score rating was interpreted based on the individual indicators to ascertain which dimensions represent the activeness of the individual employer, subsectors, main economic sectors and nation. The index score is categorised as follows:

Table 6
National Training Index (NTI) Score: Categories and Descriptions

Index Score	Category	Description
0.76 – 1.00	Leader	Vigorously active in training and highly prepared for training, high strength in talent development and equipped with a comprehensive training plan and high investment in training.
0.51 – 0.75	Experienced	Active in training and moderately prepared for training by having a better environment and capacity for training, moderate talent development, and practical training plan with sufficient funding.
0.26 – 0.50	Adopter	Moderately active in training with moderate training preparation, talent development and quality of training. Possess adequate training plans and materials with moderate training allocation.
0.00 – 0.25	Beginner	Low participation or commitment in training preparation or talent development or low quality of training. Lack of training allocation and basic training plans and materials.

Nonetheless, the interpretation of the index score is subject to individual dimensions, indicators scores, and weightage. Every sector and employer may have different strength areas, although it has the same index score, which is not limited to the description as stated in the category level above.





The National Training Index (NTI) 2022 Overview

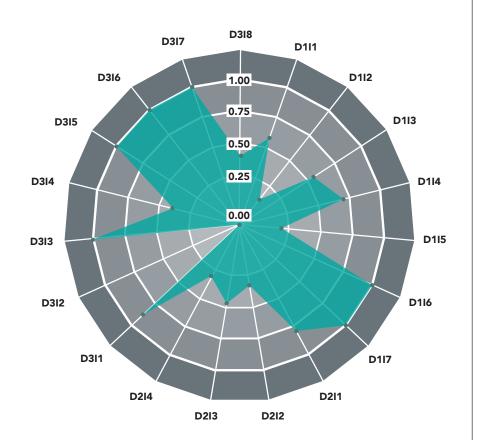
The index provides a strategic benchmarking tool for organisations and Governments to develop human capital policy. Cross-organisation comparison in training performance informs policymakers, help shape human capital development strategies and monitors public and private sector organisations' training performance over time and across industries.

THE NATIONAL TRAINING INDEX (NTI) SCORE 2022

At the national level, Malaysia is categorised as 'Experienced' with an index score of 0.70 in 2022. The index score indicates that employers in Malaysia have a high capacity for performance in terms of training preparedness, competencies of training providers, commitment to upskilling and reskilling and high adaptation to digital learning.

Training can improve job performance, increase efficiency and output by providing employees with the necessary skills and knowledge to perform their jobs more effectively. Ultimately, a productive and competitive workforce benefits the organisation and the economy as a whole.

Figure 3
National Training Index (NTI) Score for the Year 2022



Reference:

Firm Preparedness and Training Commitment

- D1I1: Amount of financial assistance allocated for training per worker
- D112: Utilisation rate of HRD Corp levy
- **D113:** Number of employees trained
- D114: Number of skilled workers trained
- D1I5: Enrolment in Recognition of Prior Learning (RPL)
- D116: Availability of training facilities at own premise
- **D117:** Availability of designated training unit

Worker Skills Development

- **D211:** Number of training days attended
- **D212:** Enrolment in technical courses
- D2I3: Number of skilled workers who attended certification courses
- D2I4: Enrolment in practical/ hands-on training

Training Provider Effectiveness

- D3I1: Enrolment in competent training provider
- training provider

 D3I2: Enrolment with certified trainer
- **D3I3:** Enrolment in courses with regular content evaluation
- D314: Enrolment in training provider for certification course
- D3I5: Enrolment in digital training
 D3I6: Enrolment in regular/
- D3I6: Enrolment in regular/ repetitive training courses
- D317: Enrolment in training provider with complete training facilities
- D318: Enrolment with established training provider



Table 7Overall National Training Index (NTI) Score 2022 **Index Score: 0.70**

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D116:	Available training facilities at own premise (1.00)
D117: D313:	The state of the s
D3I5:	High enrolment in digital training (1.00)
D3I6:	High enrolment for regular/repetitive courses (1.00)
D317:	High enrolment in training provider with complete training facilities (1.00)
D3I1:	High enrolment in competent training
D2I1:	provider (0.88) High number of training days (0.80)
D1I4:	Adequate number of skilled workers trained (0.71)
D3I4:	Adequate enrolment in training provider for certification course (0.62)
D1I1:	Adequate amount of financial assistance
D1I3:	allocated for training per worker (0.55) Adequate number of employees trained (0.53)

AREAS OF IMPROVEMENT

D2I3:	Less number of skilled workers who
	attended certification courses (0.44)
D318:	Less enrolment with established training
	provider (0.43)
D2I2:	Less enrolment in technical courses (0.35)
D2I4:	Less enrolment in practical/hands-on
	training (0.34)
D1I5:	Low enrolment in Recognition of Prior
	Learning (RPL) (0.20)
D1I2:	Low utilisation of HRD Corp levy (0.13)
D3I2:	Low enrolment with a certified trainer (0.02)

The training participation of employers in the year 2022 is separated into two (2) categories, namely, employers registered under existing subsectors before the expansion of the PSMB Act 2001, and employers registered under the newly covered subsectors after the expansion of the PSMB Act 2001 effective March

2021. A total of 16,741 employers under the subsectors before the expansion of the PSMB Act 2001 and 7,774 under the newly covered subsectors actively engaged in training throughout 2022.

Table 8

National Training Index (NTI) Score 2022 (Existing Employers Registered before the expansion of the PSMB Act 2001)

Index Score: 0.70

AREAS OF STRENGTH

D1I6:	Available training facilities at own premise (1.00)
D1I7:	Available designated training unit (1.00)
D3I3:	High enrolment to courses with regular content evaluation (1.00)
D3I5:	High enrolment in digital training (1.00)
D3I6:	High enrolment for regular/repetitive courses (1.00)
D3I7:	High enrolment in training provider with complete training facilities (1.00)
D3I4:	High enrolment in training provider for certification course (0.98)
D2I1:	High number of training days (0.95)
D1I1:	Low amount of financial assistance
	allocated for training per worker (0.82)
D1I4:	High number of skilled workers trained (0.89)
D3I1:	High enrolment in competent training provider (0.88)
D1I3:	High number of employees trained (0.85)
D2l3:	Adequate number of skilled workers who attended certification courses (0.65)

AREAS OF IMPROVEMENT

	D2I2:	Less enrolment in technical courses (0.44)
	D318:	Less enrolment with established training
		provider (0.43)
	D2I4:	Less enrolment in practical/hands-on
		training(0.42)
	D1I5:	
		Learning (RPL) (0.29)
	D1I2:	Low utilisation of HRD Corp levy (0.22)
I	D3I2:	Low enrolment with a certified trainer
		(0.02)



Table 9National Training Index (NTI) Score 2022 (New Employers Registered after the expansion of the PSMB Act 2001) **Index Score: 0.50**

AREAS OF STRENGTH

D116:	Available training facilities at own
	premise (1.00)

D117: Available designated training unit

D3I3: High enrolment to courses with regular

content evaluation (1.00)
D3I5: High enrolment in digital training (1.00)

D316: High enrolment for regular/repetitive courses (1.00)

D3I7: High enrolment in training provider

with complete training facilities (1.00)
D3I1: High enrolment in competent training

provider (0.89)
D2I1: Adequate number of training days (0.57)

D114: Adequate number of skilled workers trained (0.55)

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.44)

D111: Less amount of financial assistance allocated for training per worker (0.40)

D314: Less enrolment in training provider for certification course (0.26)

D2I3: Low number of skilled workers who attended certification courses (0.25)

D113: Low number of employees trained (0.20)

D214: Low enrolment in practical/hands-on training (0.09)

D2I2: Low enrolment in the technical courses (0.08)

D112: Low utilisation of HRD Corp levy (0.05)

D115: Low enrolment in Recognition of Prior Learning (0.02)

D3I2: Low enrolment with certified trainer (0.02)

The results in Tables 8 and 9 indicate that lifelong learning could positively impact labour productivity in Malaysia. Individuals who engage in ongoing learning will likely be more productive in their jobs, leading to economic growth and prosperity. This statement is supported by data showing that the GDP in all economic sectors continued to grow despite the pandemic, indicating that lifelong learning may have played a role in maintaining or even increasing labour productivity during a challenging time.

The rise of a digital learning culture among employees due to convenience and flexibility has also made the workforce more adaptable, knowledgeable and skilled, increasing the country's productivity and competitiveness.

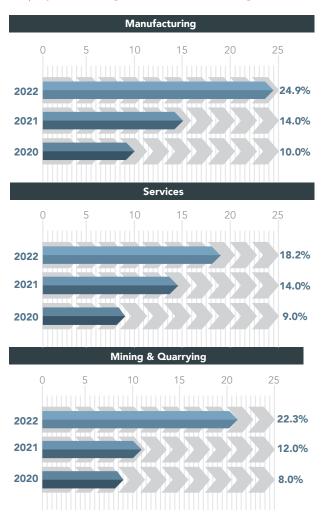


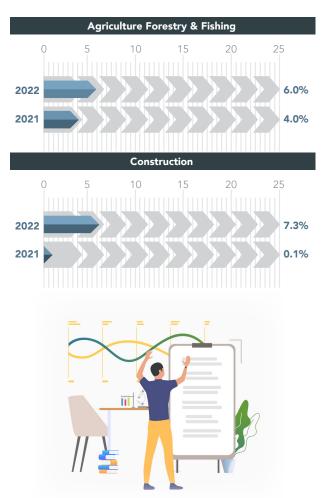
Positive Impact of Lifelong Learning on Labour Productivity in Malaysia

The data shows an adequate number of employees trained in 2022 with an index score of 0.53. This figure indicates that the importance of training is recognised and valued by various industries in Malaysia. The fact that organisations are investing in employees' training and development suggests that employers in Malaysia understand the benefits of such training programmes.



Figure 4Employees Training Ratio Trends according to Sectors for the Year 2020 – 2022





The chart shows a positive trend in the employee-training ratio for three (3) consecutive years, with more employees receiving training over time. A positive trend in the employee-training ratio also indicates that employers are becoming more aware of the importance of investing in their workforce and dedicating more resources towards employee training and development.

Employee training and development can increase productivity, reduce turnover rates, increase job satisfaction, and motivate employees. These benefits lead to improved organisational performance, increased competitiveness and a better bottom line.

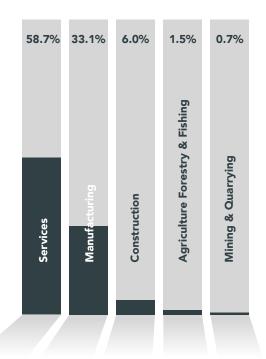
If industries in Malaysia continue to prioritise employee training and development, it could lead to a more skilled and knowledgeable workforce and higher job opportunities. Inevitably, the country will attract more foreign investment driving economic growth and contributing to a prosperous society.



Adaptability to Digital Learning Culture

In Malaysia, the training trends across various industries have shifted towards more technology-driven and personalised approaches. Common examples include digital learning platforms, virtual classrooms and e-learning solutions.

Figure 5Digital Training Trends Among Sectors



Based on the statistics for the year 2022, employers in the Services sector, such as those in Finance, Insurance and Telecommunications, recognise the need to keep their employees up-to-date with the latest digital technologies and skills. To support the latest trends and initiatives, the HRD Corp has identified nine (9) focus areas for training, which include technology and digitalisation.

The Manufacturing sector also embraced digital training with new technologies and automation playing a significant role in shaping the sector's future. In particular, technical training remains a priority in the Manufacturing sector, as employers strive to improve their competitiveness by investing in their employees' technical knowledge and skills. Typical employee training and development areas include lean manufacturing, quality control and machine maintenance.

Meanwhile, the Construction, Agriculture, Fishing & Forestry, Mining & Quarrying industries have generally have generally embraced digital training slower than the Services and Manufacturing sectors.

The unique challenges such industries face in training and development include a shortage of skilled workers, low access to technology and infrastructure, and a physically demanding work environment. Although embracing a digital learning culture may be slower in these industries, employers recognise the potential benefits and remain invested in training employees to stay competitive in a rapidly changing commercial landscape.



Readiness for Training and Development in Malaysia

Training has become increasingly important for employers in Malaysia as they seek to improve the skills and competencies of their workforce. Many employers recognise the value of investing in their employees through training and development programmes and incorporate these initiatives into their organisational culture.

Dedicated training facilities serve as a valuable resource for employers to conduct technical or handson training of employees in a safe and controlled environment.



Figure 6

Comparison of Employers' Preparedness – Training Facilities Readiness and L&D Dedicated Units for the Year 2019 and 2022



Last year, RM20 million in financial assistance was granted to equip employers with training-related equipment, indicating a strong emphasis on investing in employee training and development.

Employers in Large Enterprises have a dedicated unit or department responsible for training activities, while SME Employers have limited resources. As a result, enterprise learning is becoming an increasingly important culture for employee development in Malaysia. Employers that embrace this culture and invest in the training and development of their employees are better positioned to succeed in a rapidly changing business environment and compete effectively in the marketplace.

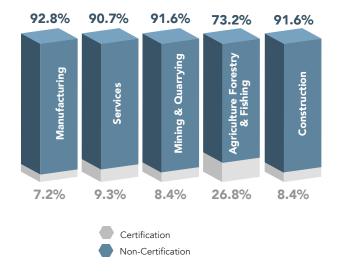


Skilled Workers and Professional Certification Courses

The Government recognises the importance of professional certification in developing a highly skilled workforce and improving the country's economic competitiveness. Professional certification gives employees the necessary skills and knowledge to perform their jobs at a high level to meet industry standards, leading to increased productivity, innovation and competitiveness in the global marketplace. To support this aspiration, HRD Corp has offered various certification programmes to upskill and reskill the workforce to meet industry demands.

Nevertheless, the data in 2022 indicates a low number of skilled workers attending certification courses despite HRD Corp's efforts to promote and encourage training in these areas. The duration involved in completing training has become a barrier for workers in SMEs. The duration of certification courses varies widely depending on the specific course and the level of certification. Some certification courses may be completed in several days, while others may take several weeks or months. On average, certification courses were conducted over a long time due to the extensive nature of the content.

Figure 7Courses Enrolled Based on Level of Certification According to Sectors





Based on the HRD Corp data, the average duration of certification courses is 4.5 days. Given the long duration, SMEs may not have the capacity to release their employees for extended periods to attend training, which leads to difficulties for employees in completing certification programmes.

Addressing the challenges of time required to complete certification programmes is essential to improve enrolment rates and ensure employees, particularly those in SMEs, have access to training and skills development opportunities to succeed in the labour market.

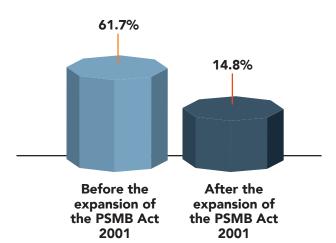
Although Malaysia has been labelled as an "Experienced" country for upskilling and reskilling, only a limited number of skilled workers participate in certification courses, despite the Government's efforts to promote and encourage employee training. Moreover, newly registered employers have demonstrated low usage of the HRD Corp levy. Therefore, the Government must continue promoting and educating employers on the advantages of training and utilising the HRD Corp levy to maintain a skilled and competitive workforce in Malaysia.



Underutilisation of HRD Corp Levy by newly Registered Employers

Low utilisation of the HRD Corp levy indicates room for improvement in managing the training and development culture in organisations and the implementation and effectiveness of HRD Corp training programmes. The underutilisation of the HRD Corp levy is mainly due to the low participation of newly registered employers. As of December 2022, about 61.5% of registered employers are new employers, including organisations in the Agriculture, Forestry & Fishing and Construction sectors.

Figure 8
Percentage of Levy Utilisation Rate in the year 2022



The data shows that among newly registered employers in the year 2022, only 14.8% of the levy has been utilised. Insufficient training funds may be a significant reason, as the monthly levy payment is only 1% of the employee's payroll. Therefore, employers should plan training and levy utilisation based on available training funds and the cost of training programmes.

Previously, the low number of training providers hindered the development of skills and knowledge. However, continuous improvement by the HRD Corp has increased opportunities to provide relevant and high-quality training programmes to various industries for better productivity, efficiency and safety on the job.

Expansion to newly covered sectors is a positive step towards promoting upskilling and reskilling, which contribute to the growth and development of the sectors and the overall economy.





TRAININGINDEX OVERVIEW 2022

The Index provides a strategic benchmarking tool for peer-to-peer industries to assess performance in training and development.

Manufacturing



Manufacturing Sector

The Manufacturing sector has contributed significantly to Malaysia's economy based on GDP and employment growth. Based on the Quarterly GDP Statistics published by DOSM, the Manufacturing sector expanded by 3.9% in Q4 compared to Q3 last year.

The GDP growth contribution in the Manufacturing sector comprised Electrical, Electronics and Optical Products (9.2%), Transport Equipment, Other Manufacturing and Repair (4.9%) and Vegetable and Animal Oils & Fats and Food Processing (4.3%) subsectors. In Q4 of 2022, out of the 2,414,000 jobs, 2,307,000 were filled while 107,500 were vacant. The sector's filled jobs and vacancies rate were 95.5% and 4.5%, respectively (DOSM, 2022). The rise in job opportunities in the Manufacturing sector signifies that businesses have gradually picked up despite shifting business trends from current manual tasks to advanced manufacturing technology.

As the industry comprises both export and domestic-oriented subsectors, the production of higher value, varied and more complex products, especially industrial catalyst subsectors, namely, Electrical and Electronics (E&E), Machinery and Equipment (M&E) and Chemicals and Chemical Products will continue to be prioritised (Malaysian Investment Development Authority, 2021). These job fields require skilled, creative and innovative personnel with modern technological knowledge to improve products and delivery processes continuously. Accordingly, investment in lifelong learning and digital training is vital for employees to reach their full potential as skilled workers and for industries to generate more revenue.

Performance Summary

The Manufacturing sector is facing a rapid digital transformation towards technology-driven production systems. Therefore, learning and development are essential to embrace changes and promote creativity in the workforce. Figure 9 and Table 10 illustrate the Manufacturing sector performance at each indicator level. The Manufacturing sector is at the "Leader" level with an overall index score of 0.98, indicating employers in the Manufacturing sector are actively training their employers in 2022. Firm Preparedness, Worker Skills Development and Training Provider Effectiveness largely influenced the strength of the Index, with the



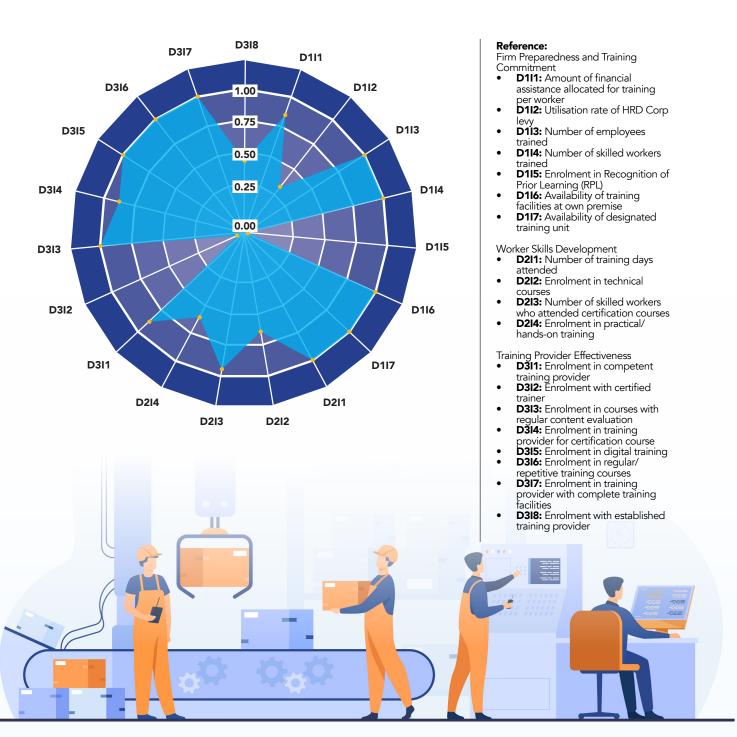
majority indicator scores above 0.60. The following subsectors recorded the highest training index score:

- Manufacturing of Electric Motors, Generators, Transformers and Electricity Distribution and Control Apparatus (0.76);
- 2) Processing and Preserving of Meat (0.63);
- 3) Manufacture of Basic Chemicals, Fertilisers and Nitrogen Compounds, Plastics and Synthetic Rubber in Primary Forms (0.59);
- 4) Manufacture of Structural Metal Products, Tanks, Reservoirs and Steam Generators (0.54); and
- 5) Manufacture of Refined Petroleum Products (0.54).

Training participation in the Manufacturing sector focuses on technical and hands-on in line with the industry's culture of creating more practical jobs requiring highly technical skills in production. Similar to other industries, participation in training and development is projected to grow in the Manufacturing sector due to digitisation.



Figure 9Manufacturing Sector Training Index Score for the year 2022



Overall Manufacturing Sector Training Index Score for the Year 2022

Overall Index Score: 0.98

AREAS OF STRENGTH

D113: High number of employees trained (1.00)

D1I4: High number of skilled workers trained

(1.00)

D116: Available training facilities at own premise

D117: Available designated training unit (1.00)

D2I1: High number of training days (1.00)

D3I3: High enrolment in courses with regular content evaluation (1.00)

D3I5: High enrolment in digital training (1.00)

D3I6: High enrolment in regular/repetitive courses (1.00)

D3I7: High enrolment in training provider with complete training facilities (1.00)

D2I3: High number of skilled workers who

attended certification courses (0.99)

D3I1: High enrolment in competent training provider (0.88)

D3I4: High enrolment in training provider for certification course (0.88)

D1I1: High amount of financial assistance allocated for training per worker (0.83)

D2I2: Adequate enrolment in technical courses

D2I4: Adequate enrolment in practical/handson training (0.63)

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.42)

D112: Less utilisation of HRD Corp levy (0.29)

D3I2: Low enrolment with a certified trainer

(0.02)

D115: No enrolment in Recognition of Prior

Learning (RPL) (0.00)

The expansion of subsector coverage has significantly impacted the sector's scoring index, particularly in training enrolment and levy utilisation. The data reveals that out of 15,960 employers, 98.4% (15,699) are employers from existing subsectors, while only 1.6% (261) are from the newly covered subsectors.

Tables 11 and 12 below show the training performance of employers under subsectors before and after the expansion of the PSMB Act 2001, respectively. Employers registered under the subsectors before the expansion of the PSMB Act 2001 recorded a high score of 0.98. In contrast, after the after the expansion of the PSMB Act 2001, employers under the newly covered subsectors registered a low index score of only 0.36.

This finding highlights that employers registered before the expansion of the PSMB Act 2001 contributed the most to the high score index for Manufacturing as the matured industry in Malaysia. When zooming in on the individual index score, the HRD Corp training levy utilisation among the individual active employers is relatively high, with an average of 56.6%, and highly trained employees (1.00) contributed to the high score index for Manufacturing.

The Manufacturing sector was the most severely impacted industry when the pandemic struck as the majority of its sectors, including Transport Equipment and Other Manufacturing; Non-Metallic Minerals, Base Metals and Engineered Metals; Wood, Furniture, Paper Products and Printing; and Textiles, Clothing, Leather and Footwear were forbidden from operating (MIDA, 2021). The situation has impacted the sector's business performance financially.

In supporting the sector through the hard times, HRD Corp has provided levy exemption to the newly registered employers during the Movement Control Order (MCO) phase in 2021, which answered the low training participation among the newly registered employers cumulatively.



Table 11

Manufacturing Sector Training Index Score 2022 (Existing Employers Registered before the expansion of the PSMB Act 2001) Index Score: 0.98

AREAS OF STRENGTH

D113: High number of employees trained (1.00)

D114: High number of skilled workers trained (1.00)

D116: Available training facilities at own premise (1.00)

D117: Available designated training unit (1.00)

D2I1: High number of training days (1.00) D3I3: High enrolment in courses with regular

content evaluation (1.00) D3I5: High enrolment in digital training (1.00)

D3I6: High enrolment in regular/repetitive courses (1.00)

D3I7: High enrolment in training provider with complete training facilities (1.00)

D213: High number of skilled workers who attended certification courses (0.99)

D3I1: High enrolment in competent training provider (0.88)

D3I4: High enrolment in training provider for certification course (0.88)

D1I1: High amount of financial assistance allocated for training per worker (0.83)

D2I2: Adequate enrolment in technical courses (0.69)

D2I4: Adequate enrolment in practical/handson training (0.63)

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.42)

D1I2: Less utilisation of HRD Corp levy (0.29)

D3I2: Low enrolment with a certified trainer

D115: No enrolment in Recognition of Prior Learning (RPL) (0.00)

Table 12

Manufacturing Sector Training Index Score 2022 (New Employers Registered after the expansion of the PSMB Act

Index Score: 0.36

AREAS OF STRENGTH

D116: Available training facilities at own premise (1.00)

D1I7: Available designated training unit (1.00)

D3I3: High enrolment in courses with regular content evaluation (1.00)

D3I5: High enrolment in digital training (1.00) D316: High enrolment in regular/repetitive

courses (1.00)

High enrolment in training provider with D3I7: complete training facilities (1.00)

D3I1: High enrolment in competent training provider (0.88)

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.45)

D2I1: Less number of training days (0.35)

Less number of skilled workers trained D1I4: (0.30)

D1I1: Low amount of financial assistance allocated for training per worker (0.25)

D2I3: Low number of skilled workers who attended certification courses (0.13)

D3I4: Low enrolment in training provider for certification course (0.13)

D1I3: Low number of employees trained (0.06)

Low utilisation of HRD Corp levy (0.03) D1I2:

D3I2: Low enrolment with a certified trainer (0.02)

D1I5: No enrolment in Recognition of Prior Learning (RPL) (0.00)

D2I2: No enrolment in technical courses (0.00)

No enrolment in practical/hands-on D2I4: training (0.00)



According to the Index score, the Manufacturing sector achieved the highest training participation with outstanding performance in providing certification to employees to close skill gaps. In addition, implementing practical or handson training provides an immersive experience to workers, allowing them to learn by doing and leveraging advanced technology in upskilling and reskilling.



Bridging Skill Gaps in the Manufacturing Sector through Certified Workers

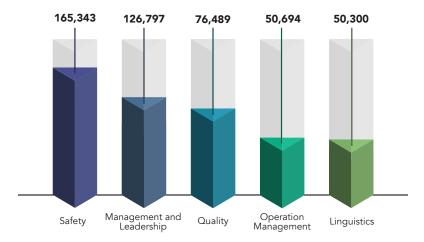
The urgency of industry players to minimise skill gaps among workers is in line with the transition to the Industrial Revolution 4.0 (IR4.0) and digitalisation. As more jobs become automated, such as the assembly of vehicles and welding metals using robots and sensors, the demands for digital proficiency to run machinery continue to rise steadily. Therefore, workers must upskill with adequate certification to adapt to digital disruption.

On a side note, the Manufacturing sector production index increased by 3.0%, mainly driven by Electrical & Electronic Products (7.2%), Food, Beverages & Tobacco Products (3.4%), Transport Equipment and Other Manufacturing (8.5%), and Non-metallic Mineral Products, Basic Metal & Fabricated Metal Products (2.2%) (Malaysia's Industrial Production Index (IPI) December 2022, DOSM). The critical demand for skilled workers in driving the growth and sustainability of the industry cannot be overlooked. Innovative ways to increase production and productivity are essential by enhancing current skills and ensuring the workforce is equipped with in-demand skills. With more skilled workers, the Manufacturing sector has excellent opportunities to tap into foreign investments in local businesses.

Major manufacturing companies increasingly digitise operations, continuously collecting and utilising data from machines and products to optimise production. According to the Manufacturing Institute Report 2022, employees with an agile mindset, critical thinking, problem-solving skills, data analytics, and digitisation abilities are in demand as technology advances.

Figure 10 displays critical skill areas prioritised in manufacturing sector training programmes last year. Safety, Management and Leadership, and Quality are among the primary skills of concern. The Massachusetts Institute of Technology (MIT) Task Force on the Future of Work stated that enhancing quality was a significant incentive for acquiring new technology, often resulting in upskilling existing workers and hiring new employees with the necessary skills to operate the new technology. Therefore, automation eliminates undesirable aspects of manufacturing jobs while enhancing safety and precision.

Figure 10
Top Five (5) Skill Areas in the Manufacturing Sector Based on Training Participation







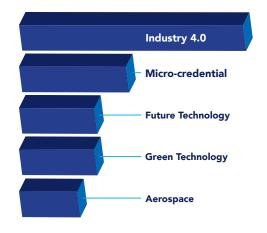
Leveraging Technology with the Rise of Advanced Manufacturing

As one of the most durable and active sectors driving economic growth, the Manufacturing industry has much to be admired in terms of longevity and vitality. One of the primary factors influencing the success of the Manufacturing sector is continuous evolution in line with the quantum leap in technology. According to Deloitte's 2022 Manufacturing Industry Outlook, many manufacturers are investing in laying the foundation for smart factories powered by cloud, edge computing, and 5G connectivity. Manufacturers with higher digital capabilities increase supply chain visibility and are more adaptable to supply chain challenges.

In Malaysia, more businesses are becoming aware of the potential they can achieve by implementing Smart Manufacturing due to the impact of COVID-19. Workforce reskilling is the main factor ensuring the smooth operation of new systems. In 2022, around RM373 million in financial assistance was approved for Manufacturing employers (HRD Corp, 2022).

Due to rapid advancements in digitalisation and digital services driven by Artificial Intelligence (AI), Internet of Things (IoT), Cybersecurity and 5G, HRD Corp urged registered employers to focus on nine (9) Focus Area Courses: Digitalisation and Advanced Technology, Industry 4.0, Green Technology/Renewable Energy, Fintech, Smart Construction, Smart Farming, Aerospace Industry, Blockchain, Microcredential and Future Technology. Since then, HRD Corp has taken the lead in encouraging training providers to offer modular courses in these emerging and critical areas. As of 2022, there are about 112,709 courses registered as HRD Claimable courses. As for enrolment in training programmes, 61.8% fall under the Industry 4.0 focus area, strongly emphasising automation and data exchange in technology and manufacturing processes. In addition, employers in the Manufacturing sector encourage employees to primarily enrol in courses that emphasise micro-credentials certified by authorised bodies, particularly those related to standard procedures in manufacturing. Therefore, training programmes and employer participation in the specified focus areas allow workers to upskill and adapt to technological disruption. Figure 11 shows the top focus areas in demand in the Manufacturing industry.

Figure 11
Top Five (5) Focus Areas for Enrolment of Training Programmes in the Manufacturing Sector



Given the growing trend towards automation and data exchange in technology, training programmes must be advanced and comprehensive. Various technological approaches, such as virtual or online learning, can be implemented to deliver knowledge to employees. Virtual learning occurs in two (2) different modes: synchronous, where all learners study simultaneously, and asynchronous, where learners take classes at their own pace. Based on the statistics, digital training is widely implemented through mobile e-learning, remote online learning and e-learning platforms. About 31.7% of the training grants approved in 2022 were digital training. Most courses are related to computer technical training, such as analytics, lean agile training, system awareness and risk management. Training providers' competencies in conducting digital learning are crucial for employees to be more adaptable. Employers prefer online learning platforms that optimise employees' time and are flexible to digital certifications with an overall average training duration of two (2) days per training. Apart from minimising the time spent by employees, this approach also minimises other additional costs, such as transportation, meal and accommodation, especially in high-cost training programmes which offer certifications such as Diploma, Degrees, Masters, PhD and Professional Certificates.





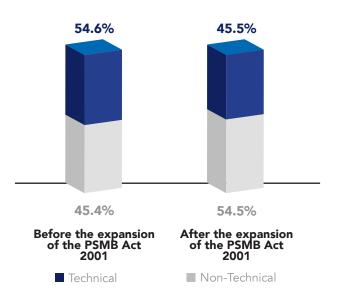
Practical or Hands-On Training Participation in Recognising Workforce Skills

The 12MP targets productivity growth across all sectors to revive economic growth and improve industry competitiveness. Collaboration between employers, workers and job training providers from a single industry is necessary to address specific workforce needs.

Poor workforce skill recognition within the Manufacturing sector affects the national aspiration of a 35% skilled workforce by 2030. In industries such as Manufacturing, workers must adhere to strict compliance standards or obtain specific certifications before taking on a job. Maintaining a record of training and credentials is critical. Collaboration between the Manufacturing sector and skills training institutions to curate customised training programmes to address specific needs and move up the value chain is widely welcomed.

In the Manufacturing industry, most manufacturer workers are expected to have years of experience handling machinery. Only practical and hands-on training will enable workers to gain such skills. According to the sector index, the training enrolment for practical or hands-on training in this industry recorded a strong index score of 0.63, the highest among the five (5) economic sectors. The high index score aligns with the Manufacturing sector's work culture with access to work materials and equipment. For example, equipment used in the workplace can be hazardous when misused. Therefore, gaining relevant hands-on learning experience to operate machinery is essential. Employers can also implement training programmes combining theoretical and practical approaches for workers to gain a well-rounded understanding of the concepts while developing practical skills.

Figure 12Technical vs Non-Technical Training Enrolment in the Manufacturing Sector



Technical skills are crucial in developing, designing, implementing, maintaining and operating particular technology and products to remain competitive in the Manufacturing sector. Figure 12 displays the number of technical and non-technical courses enrolled by Manufacturing sector employers. The data shows that employers under existing subsectors before the expansion of the PSMB Act 2001 have taken more technical courses than non-technical courses, with a difference of 9.2%. Conversely, employers of the newly covered subsectors after the expansion of the PSMB Act 2001 have taken fewer technical courses than non-technical courses.

On the other hand, some technical courses may be declined due to changes in the training mode. For instance, physical training converted to online learning focuses mainly on theory rather than practice, leading to an emphasis on non-technical courses. However, it is crucial to note that training for the Manufacturing sector should not only be theoretical, as Manufacturing heavily involves practical work. Therefore, employers must restructure their training programmes to provide more hands-on training and technical skills to equip workers with the necessary skills and experience to succeed in their respective roles.



Low HRD Corp Levy Utilisation due to COVID-19 Pandemic Levy Payment **Exemption**

The average levy utilisation among registered employers was relatively low, indicating that employers need to fully optimise the levy for training, despite the overall index indicating that the Manufacturing sector has the highest index (29.3%).

Figure 13 Comparison of Average Levy Utilisation Rate Among Manufacturing Sector Employers before and after the expansion of the PSMB Act 2001

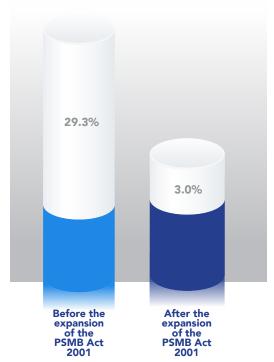


Figure 13 compares average levy utilisation among new and existing employers, with low levy utilisation rates recorded in the new subsectors. This situation may be due to insufficient levy balance for training among employers in the new subsectors with an additional exemption of levy payment for three (3) months from March 1, 2021, to May 31, 2021. In 2021 alone, there were a few stages of levy exemption due to the Movement Control Order (MCO) to ease the financial burden faced by businesses (HRD Corp Circular No. 5, Exemption of Human Resources Development Levy for June for Registered Employers Under All Industries (2021). All the above circumstances have impacted.

According to the Training Needs Analysis conducted in 2019, a significant obstacle faced by employers in the Manufacturing sector is scarce labour, which hinders the ability to send workers for training. This shortage negatively impacts productivity and production levels. The HRD Corp has implemented various programmes and opportunities to address these challenges using diverse platforms and training modes to equip workers with the necessary skills and foster a culture of lifelong learning among employees.



Industry-certified Trainers in Workforce Empowerment

One of the critical factors in ensuring a successful lifelong learning plan is the selection of industry-certified trainers. These trainers keep employees updated with industry trends, practices and technologies. Industry-certified trainers are experts in their respective fields with extensive knowledge of the evolving industry. For example, new software and programmes are constantly being introduced into the workplace in the digital transformation era. By providing theoretical and practical training, certified trainers help employees to understand and adapt to these changes, ensuring the organisation stays competitive and innovative. Besides selecting well-certified trainers, developing a comprehensive training programme that caters to the organisation's specific needs is essential. Training programmes should equip employees with in-demand skills and knowledge to excel in their roles while promoting a culture of continuous learning and development. On the other hand, employers can engage internal trainers for employee training and development in which inhouse training are the common mode preferred by employers in year 2022.



Figure 14 Types of Training Conducted by the Manufacturing Sector

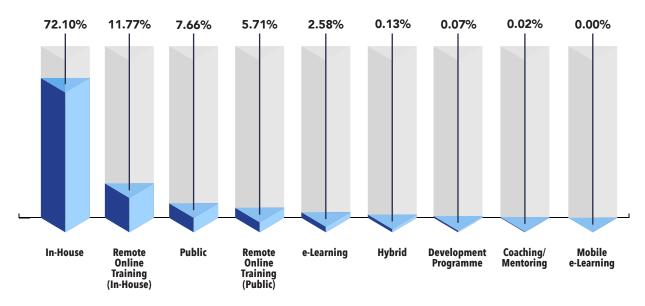


Figure 14 illustrates the types of training conducted by the Manufacturing sector employers. In-house training is the most common type of training (72.1%). Many employers prefer training on-site with equipment at their premises rather than outside the working place to align training and development to their specific needs and culture.

In addition, the number of certified trainers enrolled by employers in the Manufacturing sector is higher than non-certified trainers at almost 98.0% (Figure 15). Employers place a high value on trainers' expertise to deliver high-quality training.

More certified trainers in the industry will give employers, especially SMEs, various options to upskill employees for a more skilled workforce, higher productivity and profitability. Therefore, the Manufacturing sector needs to continue investing in training and development, whether inhouse training, remote online training or public training.

Certified Trainers vs Non-Certified Trainers in the Manufacturing







Services Sector

The Services sector plays a vital role in modern economies after the industrial era, providing a range of intangible goods and services essential for economic growth. According to the Quarterly Gross Domestic Product Statistics by DOSM, the Services sector experienced robust growth in 2022, expanding by 8.9%. This growth was underpinned by consumer-related subsectors, which benefited from improved labour market conditions and a sustained recovery in tourism activities.

According to DOSM, in Q4 2022, the Services sector represented the most significant portion of employment, with 51.8% of total jobs in Malaysia. The largest employers in the Services sector include Food and Beverage, Information and Communication, Wholesale and Retail Trade, and Hotels and Restaurants. High employment share in the Services sector can be attributed to many labour-intensive industries and the relatively low level of technology in Malaysian Services Production.

It is essential to note that the traditional view of Services as a labour-intensive industry is changing. The Services sector is becoming increasingly technology-intensive, with ICT for producing and delivering services, such as finance, transport and telecommunications. The shift towards being technology-driven has transformed the Services sector into a highly capital and technology-intensive industry.





Performance Summary

The Services sector accounts for a significant proportion of total employment in Malaysia. It is reasonable to expect this sector to invest heavily in employee training and development. The exact level of investment in training and development by the Services sector may vary by industry and company.

Generally, industries with high employment levels strongly emphasise workforce development to improve productivity, quality and customer service.

The Services sector displayed exemplary performance in all three (3) dimensions. Figure 16 and Table 13 show that the Services sector is at the 'Leader' level in upskilling employees with an index score of 0.85.

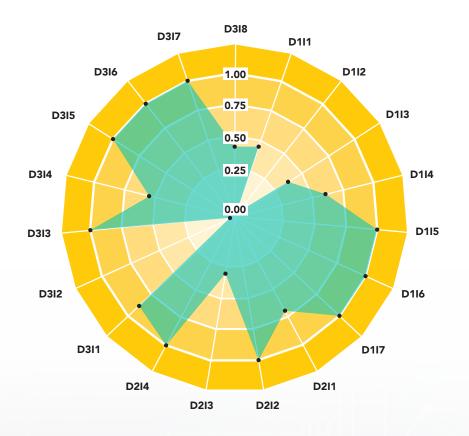
However, the training performance of the Services sector slightly decreased compared to the Manufacturing sector in 2022 due to 21.8% being newly registered with the HRD Corp and a low levy balance for training activities.

The top five (5) active Services subsectors with the highest training index score are as follows:

- 1) Radio Broadcasting (0.70);
- 2) Monetary Intermediation (0.64);
- 3) Hospital Activities (0.63);
- 4) Wired Telecommunications Activities (0.54); and
- 5) Water Collection, Treatment and Supply (0.54).



Figure 16 Services Sector Training Index Score for the year 2022



Reference:

Firm Preparedness and Training Commitment

- **D1I1:** Amount of financial assistance allocated for training per worker
- D112: Utilisation rate of HRD Corp
- **D113:** Number of employees trained
- **D114:** Number of skilled workers trained
- D115: Enrolment in Recognition of Prior Learning (RPL)
 D116: Availability of training
- facilities at own premise **D117:** Availability of designated training unit

Worker Skills Development

- **D2I1:** Number of training days attended
- **D2I2:** Enrolment in technical
- **D2I3:** Number of skilled workers who attended certification courses
- **D2I4:** Enrolment in practical/ hands-on training

Training Provider Effectiveness

- **D3I1:** Enrolment in competent
- training provider

 D312: Enrolment with certified trainer
- D3I3: Enrolment in courses with regular content evaluation
- D3I4: Enrolment in training provider for certification course
- D3I5: Enrolment in digital training
- **D316:** Enrolment in regular/ repetitive training courses
- **D317:** Enrolment in training provider with complete training facilities
- D318: Enrolment with established training provider

Table 13 Overall Services Sector Training Index Score 2022 **Overall Index Score: 0.85**

AREA		

High enrolment in Recognition of Prior

Learning (RPL) (1.00)

D116: Available training facilities at own premise

(1.00)D117:

Available designated training unit (1.00) D2I2: High enrolment in technical courses (1.00)

D3I3: High enrolment in courses with regular

content evaluation (1.00) D3I5: High enrolment in digital training (1.00)

D3I6: High enrolment in regular/repetitive courses (1.00)

D3I7: High enrolment in training provider with

complete training facilities (1.00) D2I4: High enrolment in practical/hands-on

training (1.00) D3I1: High enrolment in competent training

provider (0.88)

D2I1: Adequate number of training days (0.68) D1I4: Adequate number of skilled workers

trained (0.63)

Adequate enrolment in training provider D314: for certification course (0.54)

Based on Tables 14 and 15, the comparison shows that employers registered before the expansion of the PSMB Act 2001 had better training performance with an overall index score of 0.88 compared to newly registered employers after the expansion of the PSMB Act 2001 (0.56). The statistics also indicate that existing employers have more resources to invest in training, such as a sufficient training budget and robust culture of learning and development with a proven consistency in performing training activities annually.

On the other hand, one of the contributing factors to the lower training performance of newly registered employers is the levy payment exemption during the COVID-19 pandemic from 2020 to 2021. The exemption of levy payment led to limited funding for training and development programmes, making it more difficult for employers to invest in employee skills and knowledge, which may reduce training performance resulting in a less skilled workforce.

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.43)

D1I1: Less amount of financial assistance allocated for training per worker (0.44)

D113: Less number of employees trained (0.38)

D2I3: Less number of skilled workers who

attended certification courses (0.35) D112: Low utilisation of HRD Corp levy (0.11)

D3I2: Low enrolment with a certified trainer

(0.02)



Table 14

Services Sector Training Index Score 2022 (Existing Employers Registered before the expansion of the PSMB Act 2001)

Index Score: 0.88

AREAS OF STRENGTH

D116:	Available training facilities at own premise	
	(1.00)	

- D117: Available designated training unit (1.00)
- D315: High enrolment in digital training (1.00)
- D316: High enrolment in regular/repetitive courses (1.00)
- D317: High enrolment in training provider with complete training facilities (1.00)
- D2I1: High number of training days (0.96)
- D3l4: High enrolment in training provider for certification course (0.94)
- D3l1: High enrolment in competent training provider (0.88)
- D115: High enrolment in Recognition of Prior Learning (RPL) (0.85)
- D111: Adequate amount of financial assistance allocated for training per worker (0.63)
- D212: Adequate enrolment in technical courses (0.63)
- D114: Adequate number of skilled workers trained (0.74)
- D214: Adequate enrolment in practical/handson training (0.59)
- D113: Adequate number of employees trained (0.54)

AREAS OF IMPROVEMENT

D213: Less number of skilled workers who attended certification courses (0.48)

D318: Less enrolment with established training provider (0.45)

D1I2: Low utilisation of HRD Corp levy (0.17)

D312: Low enrolment with a certified trainer (0.02)

Table 15:

Services Sector Training Index Score 2022 (Existing Employers Registered after the expansion of the PSMB Act 2001)

Index Score: 0.56

AREAS OF STRENGTH

D116: Available training facilities at own premise (1.00)

D117: Available designated training unit (1.00)

D3I5: High enrolment in digital training (1.00)

D316: High enrolment in regular/repetitive courses (1.00)

D317: High enrolment in training provider with complete training facilities (1.00)

D3I1: High enrolment in competent training provider (0.88)

D114: Adequate number of skilled workers trained (0.52)

D2I4: Adequate enrolment in practical/hands-on training (0.41)

AREAS OF IMPROVEMENT

D318: Less enrolment with established training provider (0.48)

D2I1: Less number of training days (0.44)

D212: Less enrolment in technical courses (0.36) D111: Less amount of financial assistance

allocated for training per worker (0.28)

D113: Low number of employees trained (0.24) D213: Low number of skilled workers who

attended certification courses (0.23)
D3I4: Low enrolment in training provider for

certification course (0.18) D115: Low enrolment in Recognition of Prior

Learning (RPL) (0.14)

D112: Low utilisation of HRD Corp levy (0.05)

D312: Low enrolment with a certified trainer (0.02)





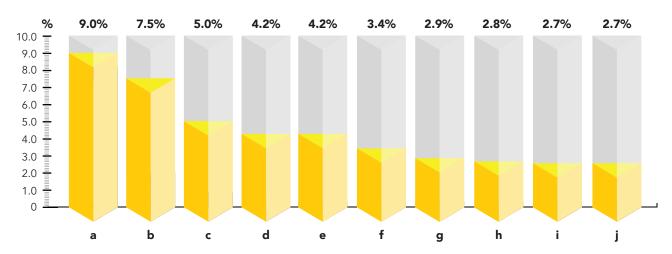
Services Sector Embracing Digitalisation and Advanced Technology

According to a recent World Economic Forum Report, nearly 30% of new job opportunities globally will be in data, AI, engineering and cloud computing. These trends reflect the growth of the Digital Economy. The Services sector is increasingly embracing digitalisation and advanced technology to enhance business operations and provide better services to customers.

Malaysia must evolve and innovate continuously to become a prosperous and resilient digital nation. Digitalisation, technology adoption and innovation are essential in ensuring sustainable economic growth. The onset of the COVID-19 pandemic in 2020 significantly altered business operations and accelerated digital technology adoption. While digital transformation demands the need for change, people must drive such changes.

In line with the current status, the Services sector stands out in efforts to promote digitalisation to enhance employee learning and development. Moreover, the industry reinforces lifelong learning by offering technical programmes. These two areas highlight the Services sector's commitment to employee development.

Figure 17Subsectors among the Services sector with high enrolment in digital training for the year 2022



- Architectural and engineering activities and related technical consultancy.
- Computer programming, consultancy and related activities.
- c. Support activities for transportation
- d. Short term accomodation activities
- e. Accounting, bookeeping and auditing activities; tax consultancy
- f. Restaurants and mobile food service activities
- g. Transport via railways
- h. Retail sale in non-specialised stores
- i. Real estate activities with own or leased property
- j. Wholesale of household goods

Figure 17 shows that Architectural and Engineering Activities, Computer Programming, and Support Activities for Transportation are among the industries within the Services sector that applied digital training for employees. Digital training helps employees in the architectural and engineering industry to develop skills in computer-aided design (CAD) software, building information modelling (BIM) and other digital tools commonly used in the industry. Computer programming via digital training covers various topics, including programming languages, software development tools, cybersecurity,



data analytics and AI. Digital training also supports the transportation industry in developing skills in logistics management, transportation planning software and GPS technology. Further, employees in the transportation industry remain relevant with knowledge of the latest transportation regulations and safety standards.



Services Sector Strengthens Lifelong Learning Through Enrolment in Technical Programmes

The 12MP target requires the development of highly skilled talent in the workforce to meet the demands of a growing economy. The Government has identified technical or hard skills training as a 'game changer' for building highly skilled talent.

Hard Skills

Specific competencies, skills, knowledge and abilities needed to perform a specific task or role.

Soft Skills

Personality traits, social competencies and skills, knowledge and abilities used to perform interpersonal activities and unique tasks.

Source: Hard Skills vs Soft Skills by Valamis, November 2021

The Services sector has been evolving rapidly, driven by technological advancements and changing consumer preferences. Therefore, it is essential for professionals in this sector to continuously upgrade their skills and knowledge to stay relevant and competitive. New training methods, including computer simulation and virtual reality, allow employees to train on equipment without injuring themselves, disrupting production or causing damage to machinery or equipment. Enrolling in technical programmes is an effective way for individuals in the Services sector to strengthen lifelong learning. Technical programmes in the sector are designed to provide practical in-demand skills and knowledge in digital marketing, data analytics, customer service, financial management, and project management.

Figure 18Technical/Hard Skills Training Attended by Top (5) Sectors in the Year 2022



Figure 18 shows that Monetary Intermediation, Architectural and Engineering Activities and Retail Sales in Non-Specialised Stores are among the industries actively enrolled in employee technical or hard skills training. For example, Financial industry employees must understand complex financial products, markets and regulations. Technical training such as financial analysis, risk management and investment strategies assist employees in the industry to stay up to date with the latest financial trends and technology. On the other hand, the Architectural and Engineering industry involves designing, planning and constructing buildings, infrastructure and other structures. Technical training in this industry helps employees to develop skills such as project management, building information modelling and computer-aided design software. The retail industry, including Retail Sales in Non-Specialised



Stores, requires employees to have various technical skills, such as inventory management, customer service and point-of-sale systems. Technical training helps employees in the retail industry improve their job performance, increase sales and provide better customer service.

On average, most of the employers within these subsectors have registered with HRD Corp for more than six (6) years, which indicates a long-term strategy for employee development. Employers recognise the skills and knowledge required in their industries to adapt to the latest trends and technologies.

While the Services sector is dedicated to upskilling and reskilling its employees and has more areas of strength than areas of improvement, there is still work to be done, particularly by newly registered employers within this industry.



Limited Training Supply Creates Barrier for Industry to Access Skills Development Programmes

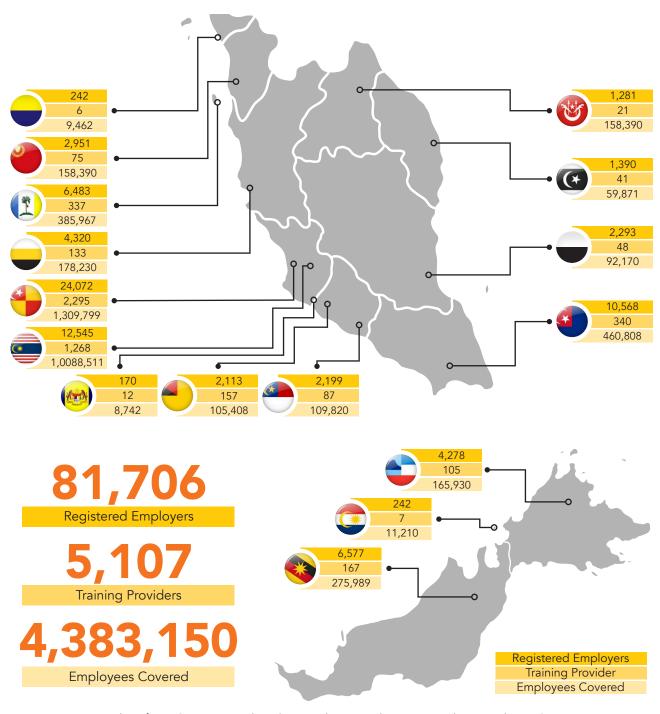
Low enrolment in established training providers, as illustrated in Figure 19, is a concern for the Services sector. The limitations of training providers and training programmes available are significant barriers to accessing training for skills development, particularly in areas where demand for specific skills may be high but training provision is limited. Concentrated training providers and suppliers are higher in Klang Valley than in other states, highlighting a significant gap between the supply and demand for training and skills development in Malaysia. The gap may lead to inaccessible employee training and development opportunities in some regions or industries vital for career advancement. When training programmes do not address a sector's specific skills and knowledge, employers may not see the value in investing in employee training. For example, if training programmes are not focusing on the latest technologies or trends in the sector, employers may not see the relevance of training to their business operations. Similarly, if training programmes do not address the specific skill gaps within the workforce, employees may not see the value in investing time and effort in completing the training.

HRD Corp's role is crucial to connect training providers to work closely with employers in the Services sector to understand the specific skills and knowledge needs. Some initiatives include a needs assessment, engaging with industry associations and experts and collaborating with employers to identify specific skills gaps within the workforce.





Figure 19HRD Corp Registered Employers and Registered Training Providers according to states



Number of HRD Corp Registered Employers and Registered Training Providers According To States

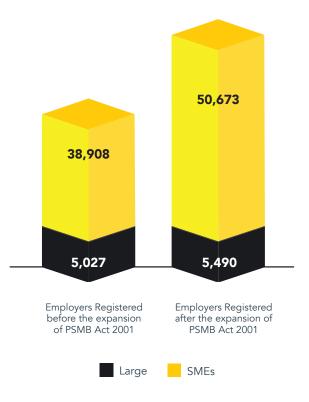




Imbalance in Training Participation Among Services Subsectors

A wide training participation gap exists among employers in the subsectors of SMEs and Large Enterprises. Based on the statistics, among the SMEs in the Services sector, 18.8% have a levy balance below RM500 due to the small monthly levy payment. In addition to financial constraints, 21.8% of employers within the Services Sector are newly registered employers after the expansion of the PSMB Act 2001, as stated in Figure 20. These newly registered employers may need more financial support to provide employees with training opportunities, particularly SMEs with limited resources.

Figure 20
Comparison of the number of Registered Employers in the Services Sector before and after the expansion of the PSMB Act 2001



Information gaps in training also affected the smaller firms' awareness of the benefits of training. Few employers view training as a strategic tool. Smaller firms may be unaware of the different types of training available, such as apprenticeships, on-the-job training or formal courses. The lack of information makes determining what type of training suits employees' needs challenging. Smaller firms may also be hesitant to invest in training due to concerns about cost. Some employers may not have a sufficient budget to cover training costs or are unsure if the benefits of training outweigh the costs.

In addition, SME employers underutilise levies, as the most active industries are large-size employers. The results show that SMEs and newly registered employers perceive access to finance and information as the most significant obstacle which hinders business growth.





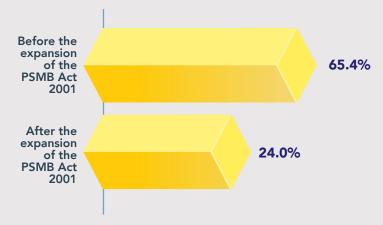




Unequal Training Opportunities Among the Subsectors

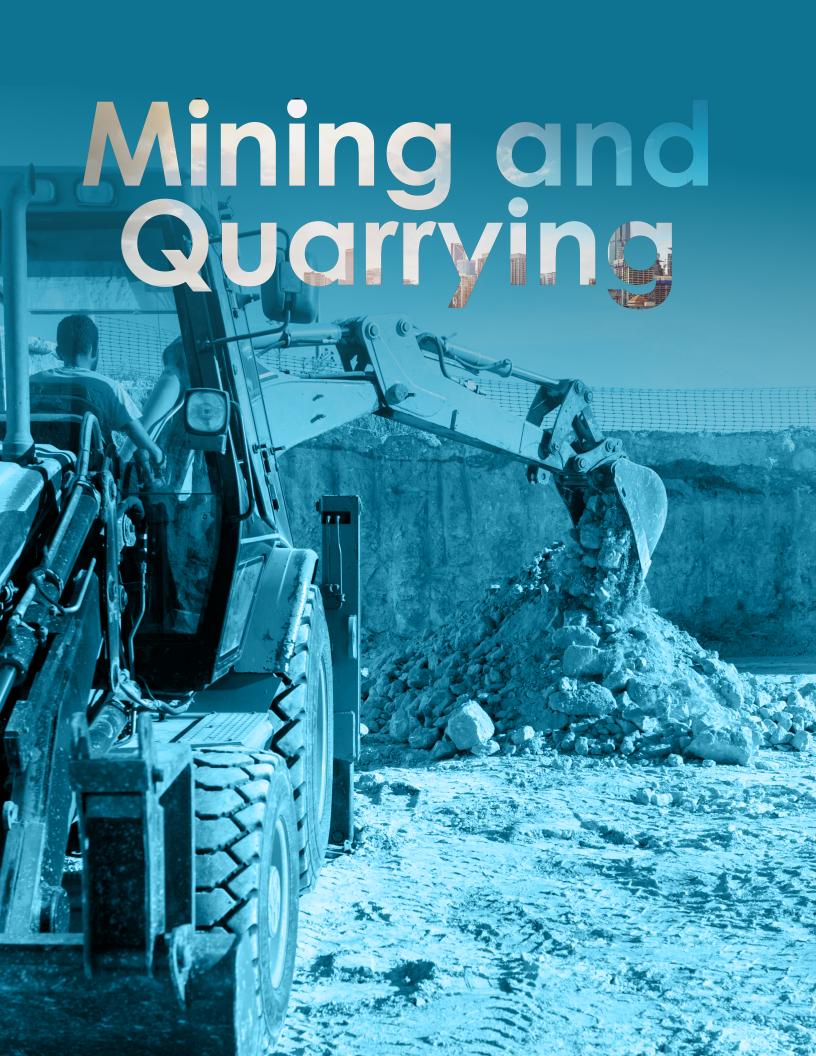
Even though the Services sector is an active industry in training, the data indicates that the sector has a low levy utilisation rate compared to other sectors. Therefore, employers in the Services sector underutilise HRD Corp levy funds. Newly registered employers in the Services sector have lower HRD Corp levy utilisation than more established employers, as stated in Figure 21. As a result, the overall percentage of levy utilisation in the Services sector has declined.

Figure 21Comparison on the average of Levy Utilisation Rate Among Services Sector Employers before and after the expansion of the PSMB Act 2001



However, even with lower levy amounts, newly registered employers in the Services sector can still access various training programmes and initiatives through HRD Corp. The training programmes offered by HRD Corp cater to different needs and levels of expertise, including technical and vocational training, soft skills training, and management and leadership development programmes.





Mining and Quarrying Sector

Malaysia has long been recognised as one of the world's leading producers of tin and non-energy materials, including bauxite, coal, copper, and iron gold. The Mining and Quarrying sector plays a significant role in the country's socioeconomic development since many other major economic sectors rely on the sector's activities and output.

The sector's growth is attributed to the recovery of global oil demand and sustained improvements in crude oil and natural gas production (Bank Negara Malaysia (BNM), Economic, Monetary and Financial Developments 2022). The operationalisation of the new Pegaga gas field in Block SK320 located in offshore East Malaysia since March 2022 and the ramp-up in PETRONAS Floating Liquefied Natural Gas-2 production had more than offset the impact of facility closures and production disruptions. The sector registered a solid growth of 3.4% (6.4% of GDP) in 2022, compared to 0.3% (6.7% of GDP) in the previous year.

On the Industrial Production Index front, as published by DOSM, the sector output grew 4.1% in December 2022 (November 2022: 6.1%), contributed by Natural Gas (3.3%) and Crude Oil & Condensate (5.1%). The job market flourished in Q4 2022 with 80,000 jobs in the sector, with a rate of 99.5% filled jobs, slightly higher than 78,000 jobs recorded at 99.4% in 2021. Job vacancies in this sector were 400 with a rate of 0.5%, with 100 jobs created.

Performance Summary

Robust backward and forward linkage with other sectors of the economy underscores the heightened training needs in the Mining and Quarrying sector. With the majority of the dimensions thriving, as depicted in Figure 22 and Table 16, the training index for the sector stands at 0.77 in 2022, which indicates the sector is at the 'Leader' level.

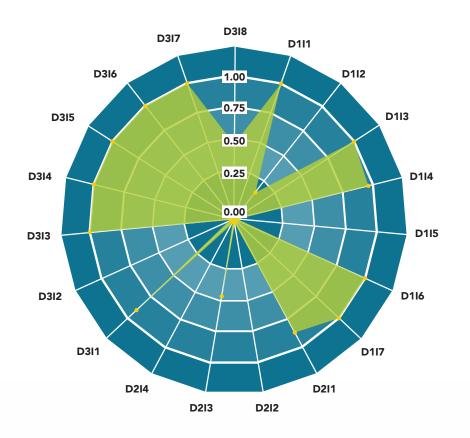
The top five (5) active subsectors in the Mining industry with the highest training index scores are as follows:

- 1) Extraction of Crude Petroleum (0.52);
- 2) Extraction of Natural Gas (0.34);
- 3) Mining of Hard Coal (0.30);
- 4) Quarrying of Stone, Sand and Clay (0.30); and
- 5) Support Activities for Petroleum and Natural Gas Extraction (0.29).

Similar to other sectors, the decline in economic performance was due to the massive hit on economic activity from the Government-imposed movement control orders on businesses to control the spread of COVID-19. This vital sector was affected by financial distress, making it difficult to meet financial obligations. Aligned with the Government's stimulus package, HRD Corp registered employers in the Mining and Quarrying sector were exempted from paying levies for (6) six months, effective April 2020 to September 2020. Meanwhile, in 2021, all registered employers were exempted from paying levies from June until August.



Figure 22 Mining & Quarrying Sector Training Index for the year 2022



Reference:

Firm Preparedness and Training Commitment

- **D1I1:** Amount of financial assistance allocated for training per worker
- **D112:** Utilisation rate of HRD Corp
- levy **D1|13:** Number of employees
- **D1I4:** Number of skilled workers
- trained **D115:** Enrolment in Recognition of Prior Learning (RPL)
- **D116:** Availability of training facilities at own premise
- **D117:** Availability of designated training unit

Worker Skills Development

- **D2I1:** Number of training days attended
- D2I2: Enrolment in technical
- **D213:** Number of skilled workers who attended certification courses
- **D2I4:** Enrolment in practical/ hands-on training

Training Provider Effectiveness

- **D3I1:** Enrolment in competent training provider

 D3I2: Enrolment with certified
- trainer
- D3I3: Enrolment in courses with

- position from the following with regular content evaluation
 position from the following provider for certification course
 position from the following position from the fo
- repetitive training courses **D317:** Enrolment in training provider with complete training facilities
- D318: Enrolment with established

Table 16
Overall Mining & Quarrying Sector Training Index Score 2022
Overall Index Score: 0.77

AREAS OF STRENGTH

D1I1: High amount of financial assistance allocated for training per worker (1.00) High number of employees trained (1.00) D1I3: D116: Available training facilities at own premise (1.00)D1I7: Available designated training unit (1.00) D3I3: High enrolment in courses with regular content evaluation (1.00) D3I4: High enrolment in training provider for certification courses (1.00) D3I5: High enrolment in digital training (1.00) D3I6: High enrolment in regular/repetitive courses (1.00)

D317: High enrolment in training provider with complete training facilities (1.00)

D114: High number of skilled workers trained (0.98)

D3I1: High enrolment in competent training provider (0.89)

D2I1: High number of training days (0.86)



AREAS OF IMPROVEMENT

D213: Less number of skilled workers who attended certification courses (0.49)

D318: Less enrolment with established training provider (0.46)

D112: Low utilisation of HRD Corp levy (0.19)

D214: Low enrolment in practical/hands-on training (0.02)

D2I2: Low enrolment in technical courses (0.01)

D312: Low enrolment with a certified trainer (0.01)

D115: No enrolment in Recognition of Prior Learning (RPL) (0.00) Based on Tables 17 and 18, existing registered employers before the expansion of the PSMB Act 2001 garnered an index score of 0.77, higher than newly registered employers at 0.64. Accordingly, existing employers are well informed about their responsibilities towards employee competency, productivity, and competitiveness, compared to other employers.

Meanwhile, the indicator shows low training activities of newly registered employers, possibly due to the low enrolment in certified trainers and practical/hands-on training. The primary concern in the sector includes how training programmes would be more effective with high standards for trainers, better tools to evaluate training effectiveness and competencies of workers once they have completed the training, and opportunities for ongoing and refresher training. In particular, training in the Mining and Quarrying sector involves theoretical studies and laboratory-scale experiments. Furthermore, there are few opportunities for continuous learning and direct training in mines or processing plants.



Table 17

Mining & Quarrying Sector Training Index Score 2022 (Existing Employers Registered before the expansion of the PSMB Act 2001)

Index Score: 0.77

AREAS OF STRENGTH

D1I1:	High amount of financial assistance
	allocated for training per worker (1.00)

D113: High number of employees trained (1.00)

D116: Available training facilities at own premise (1.00)

D117: Available designated training unit (1.00)

D3l3: High enrolment in courses with regular content evaluation (1.00)

D3I4: High enrolment in training provider for

certification course (1.00)

D3I5: High enrolment in digital training (1.00)

D316: High enrolment in regular/repetitive

courses (1.00)

D317: High enrolment in training provider with

complete training facilities (1.00)

D114: High number of skilled workers trained (0.98)

D2I1: High number of training days (0.90)
D3I1: High enrolment in competent training

provider (0.89)

AREAS OF IMPROVEMENT

D2I3: Less number of skilled workers who attended certification courses (0.49)

D318: Less enrolment with established training provider (0.46)

D112: Low utilisation of HRD Corp levy (0.19)

D214: Low enrolment in practical/hands-on training (0.07)

D2I2: Low enrolment in technical courses (0.01)

D312: Low enrolment with a certified trainer (0.01)

D115: No enrolment in Recognition of Prior Learning (RPL) (0.00)

Table 18

Mining & Quarrying Sector Training Index Score 2022 (New Employers Registered after the expansion of the PSMB Act 2001)

Index Score: 0.64

AREAS OF STRENGTH

D111: High amount of financial assistance allocated for training per worker (1.00)

D114: High number of skilled workers trained (1.00)

D116: Available training facilities at own premise (1.00)

D117: Available designated training unit (1.00)

D3I3: High enrolment in courses with regular content evaluation (1.00)

D3I5: High enrolment in digital training (1.00)

D316: High enrolment in regular/repetitive courses (1.00)

D317: High enrolment in training provider with complete training facilities (1.00)

D3I1: High enrolment in competent training

provider (0.89)

D2I1: Adequate number of training days (0.61)

AREAS OF IMPROVEMENT

D213: Less number of skilled workers who attended certification courses (0.49)

D318: Less enrolment with established training provider (0.48)

D113: Less number of employees trained (0.43)

D3I4: Less enrolment in training provider for

certification course (0.32)
D112: Low utilisation of HRD Corp levy (0.11)

D312: Low enrolment with a certified trainer (0.01)

D115: No enrolment in Recognition of Prior Learning (RPL) (0.00)

D2I2: Low enrolment in technical courses (0.00)

D214: Low enrolment in practical/hands-on training (0.00)





Skilled Workers Empower Industry

The Mining and Quarrying sector needs to complement employee acquisition and retention efforts with skills programmes from the front line to the executive level. Institutions that sustain the involvement of employers, workers, and representative organisations are critical in keeping training relevant, minimising training costs, and ensuring productivity improvement gains are shared equitably.

The number of skilled workers trained recorded a perfect score of 1.00. Many employees are being forced to step up in their roles at a much faster pace. A seamless progression requires upskilling employees by focusing on two (2) core areas: competency and proficiency. These core areas are anchored by the high financial assistance allocated for training per worker (1.00) and high enrolment in regular/repetitive courses (1.00).

For instance, the Institute of Quarrying Malaysia offers the Quarry Managers Certification Course at the industry's request. The course is accredited and aims to benefit existing and aspiring Quarry Managers by upgrading their knowledge of efficient daily site management practices. The five (5) modules include Drilling, Shot-Firing, Crushing & Screening, Occupational Safety and Health and Environmental Management.

Based on the HRD Corp database, Figure 23 shows the top five (5) job-based courses enrolled in the Mining and Quarrying Sector.



Financial Assistance for Employee Training Spurs Development

Training presents a prime opportunity to expand employees' knowledge base, but many employers find such opportunities expensive. Training levy encourages employers to invest in their workforce to increase employee skills, productivity and improve organisational performance.

Figure 23Comparison of Employee-Training Ratio before and after the expansion of the PSMB Act 2001



High financial assistance allocated for training per worker (1.00) significantly contributes to a wide array of indicators, namely, the high number of employees trained (1.00) and high enrolment in training providers with complete training facilities (1.00).

Figure 24 illustrates the top skills area in the Mining and Quarrying sector based on the highest financial assistance approved. Safety garnered the most financial funding, with 40.9% of the sector's total share of financial assistance. Occupational Safety and Health are essential in performing routine tasks, such as gas testing, firefighting and chemical handling. Management and Leadership ranked second with 20.8% of the total share, for example, project management and people management. Engineering recorded 7.9% of financial assistance, including drilling, welding, and pipeline engineering training. Linguistics and Digitalisation are equally important, garnering 7.3% and 6.1% of the sector's total share, respectively.



Figure 24
Top Five (5) Skill Areas Based on the Highest Financial Assistance Approved for Mining & Quarrying Sector

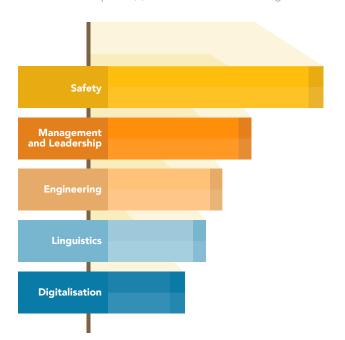


Figure 25 illustrates the top 5 courses enrolled based on the highest financial assistance allocated per worker trained in the sector. B4 Chargeman ranked first with the most amount (RM59,327), followed by B0 Chargeman (RM35,990), A4 Chargeman (RM33,170), International Petroleum Exhibition & Conference (RM27,302), and Helideck Emergency Response Team (RM25,200).

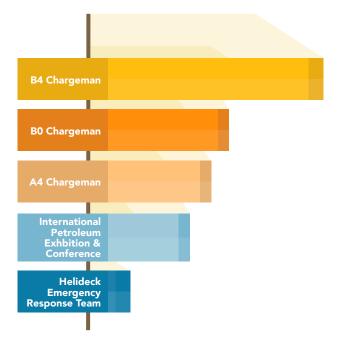
Figure 25Top Five (5) Courses Enrolled Based on the Highest Amount of Financial Assistance Allocated per Worker Trained in the Mining & Quarrying Sector



Digital Training Approaches Aims Fit-for-Purpose

Based on the index score for the Mining and Quarrying sector, high enrolment in digital training (1.00) shows that as digital adoption advances, one can opt to be in a classroom training through e-Learning or online training programme regardless of the duration of the training courses.

Employees in the Mining and Quarrying sector favour collaboration with industry experts for the latest information and sources. As such, employees can identify stages of the value chain



that presents more significant value creation. For example, they will be exposed to various developments in creating integrated systems to operate and monitor mines.

Digital training enables employers to maximise production and minimise operating costs. The global downturn in commodity prices resulted in staff reduction and costs, presenting an urgent need to streamline training protocols. E-Learning will be the most productive and cost-effective solution for this pressured environment.

In addition, digital learning accurately measures a company's training practices. Each employee's training experiences and progress can be tracked, which is invaluable in recognising areas to improve production efficiency, health and safety, and human resources.



Figure 26Top Five (5) Courses Enrolled in the Mining & Quarrying Sector Through Digital Training Platform

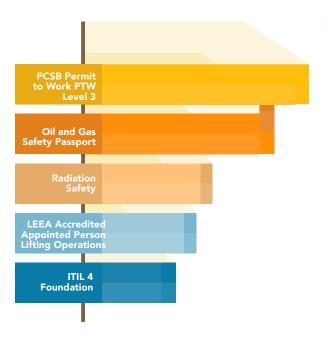
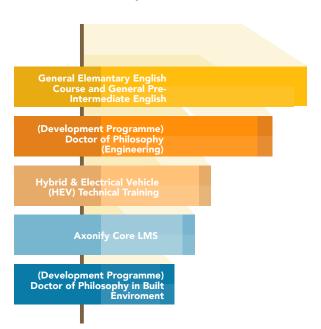


Figure 27
Top Five (5) Courses Enrolled Based on the Highest Training Duration for Mining & Quarrying Sector (Days)





Continuous Opportunities to Upskill and Reskill

Structured training programmes that may have a lengthier duration contribute to the high number of training days (0.86), high enrolment in courses with regular content evaluation (1.00) and competent training providers (0.89). Employees gain consistent experience and background knowledge in an accessible and convenient training environment that promotes a culture of continuous learning.

The Mining and Quarrying sector requires an institutionalised framework to develop coherent competency standards and systems of assessment, recognition and certification depending on the nature of the industry and the extent of existing national frameworks.

Given longer training duration to maintain an adequately skilled workforce, the Mining and Quarrying industry is strongly urged to develop multi-skilled jobs, formal skill and development programmes based on skill use.

According to McKinsey & Company (2023), longer training duration in the Mining sector will help to define career progression pathways beyond middle-management layers, levels of diversity, and inclusion. Training also improves employee satisfaction, as employees feel valued and invested in their jobs.



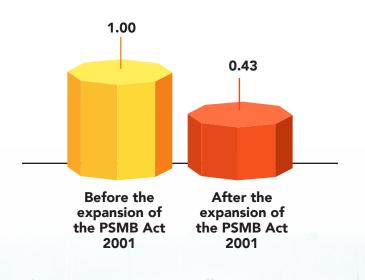


Newly Registered Employers Haul Average Rate of Sector's Levy Utilisation

Newly registered employers under the SME category contributed 91.2% of the total employer registration in 2022, translating to a low levy balance and levy utilisation rate. Regardless of industry size, employers must realise the benefits of training and development and utilise the levy for training activities.

With the number of newly registered employers rising and the gradual increase in levy payment, it is not surprising that the levy utilisation rate for this group is relatively low. As a result, it impacts employees trained ratio (0.43, previously 1.00) and the enrolment in training providers with certification courses (0.32, previously 1.00).

Figure 28Comparison of Employee Training Ratio before and after the expansion of the PSMB Act 2001







Construction

In the final quarter of 2022, the Construction sector's contribution to the GDP increased steadily to 10.3% compared to the same quarter in 2021 (DOSM). According to the 12MP, the sector is expected to grow at 4.2% yearly and boost economic performance. The number of jobs in the Construction sector continues to increase, accounting for 14.3% of jobs in the economy. In Q4 2022, 98.1% of jobs in this sector were filled, and there were 23,300 job vacancies (1.9% of total jobs). Moreover, 3,080 new jobs were created, and registered jobs increased by 2,000 compared to the previous year.

HRD Corp has initiated various programmes encouraging the industry to improve training and development. The top five (5) subsectors in the Construction industry with the highest training index scores are as follows:

- 1) Construction of Buildings (0.28);
- 2) Construction of Roads and Railways (0.25);
- 3) Construction of Other Civil Engineering Projects (0.21);
- 4) Other Specialised Construction Activities (0.21); and

Performance Summary

The Construction sector's index score is currently in the 'Adopter' category, with a score of 0.44, as shown in Figure 29. The dimension of Training Provider Effectiveness contributed the most to a perfect index score of (1.00), comprising High Enrolment of Courses with Regular Content Evaluation, Digital Learning and High Enrolment in Training Providers with Complete Training Facilities. However, there is room for improvement in Firm Preparedness/Training Commitment and Worker Skills Development. The sector must make efforts to improve its training index. As the sector typically deals with technical and highly skilled jobs, it needs to develop a comprehensive and strategic plan to attract talented and highly skilled workers. In addition, the sector faces a labour shortage, estimated at approximately 400,000 workers (CIDB, 2022). Creating a long-term, sustainable workforce through apprenticeship or TVET training is necessary to solve this problem.

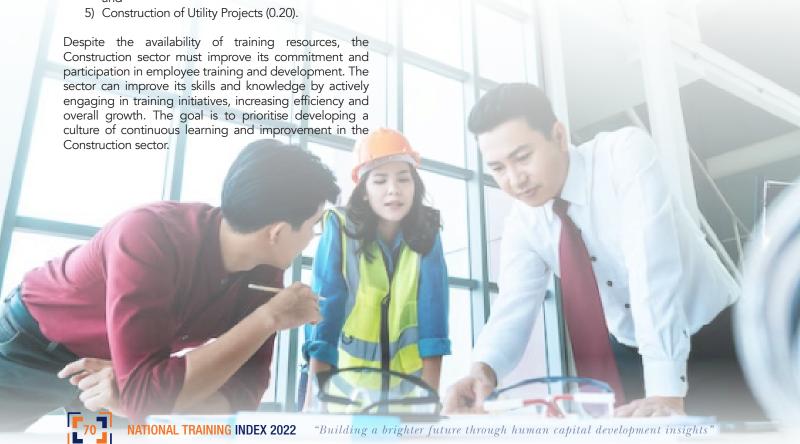


Figure 29Construction Sector Training Index for the year 2022

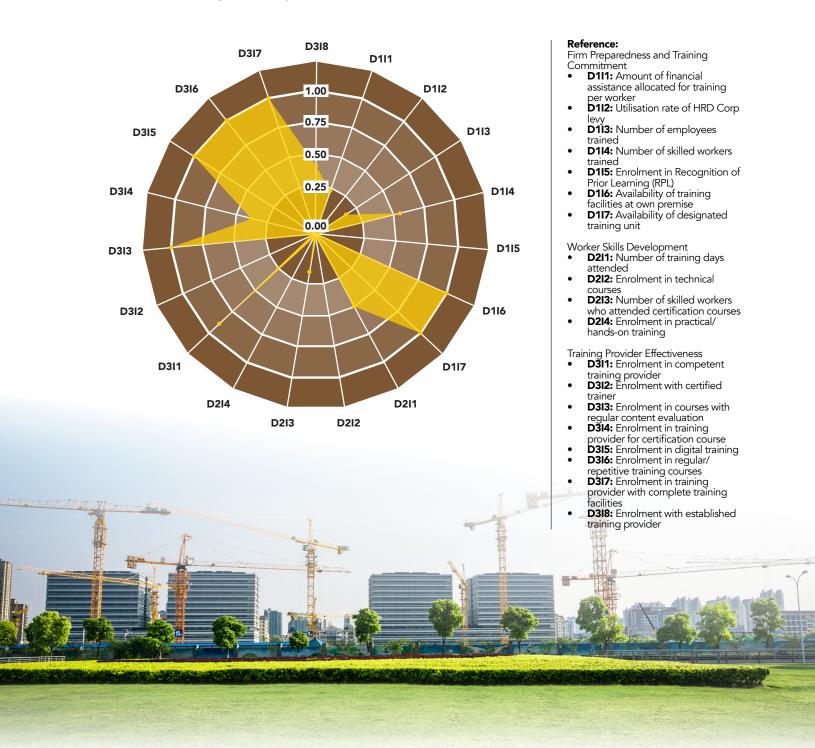


Table 19

Construction Sector Training Index Score 2022 Overall Index Score: 0.44

AREAS OF STRENGTH

D116:	Available	training	facilities	at own	premise
	$(1 \Omega\Omega)$				

D117: Available designated training unit (1.00) D3I3: High enrolment in courses with regular

content evaluation (1.00) D3I5: High enrolment in digital training (1.00)

D3I6: High enrolment on regular/repetitive courses (1.00)

D3I7: High enrolment in training provider with complete training facilities (1.00)

D3I1: High enrolment in competent training provider (0.88)

D114: Adequate number of skilled workers trained (0.52)

AREAS OF IMPROVEMENT

D2I1: Less number of training days (0.48)

D318: Less enrolment with established training provider (0.40)

D314: Less enrolment in training provider for

certification course (0.34) D1I1: Low amount of financial assistance

allocated for training per worker (0.24) D2I3: Low number of skilled workers who

attended certification courses (0.19)

D113: Low number of employees trained (0.15)

D1I2: Low utilisation of HRD Corp levy (0.04) D2I2: Low enrolment in technical courses (0.03)

D2I4: Low enrolment in practical/hands-on

training (0.02) D3I2: Low enrolment with a certified trainer

D115: No enrolment in Recognition of Prior Learning (RPL) (0.00)



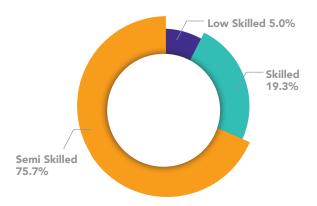
Robust Policies to Enhance the Training and Development Landscape in the **Construction Sector**

The Construction sector is a crucial part of the economy, although it has faced challenges developing its workforce in recent years. Figure 30 shows that most Construction workers are semi-skilled, comprising 75.7% of the workforce. Skilled workers account for 19.3%, while low-skilled workers represent 5.0%. In addition, the index indicator of an adequate number of skilled workers shows that the index score is below par. The industry needs more workers and resources for education and training. Therefore, more comprehensive and robust measures are required to improve the current situation.

Mandatory training and development programmes should be regularly conducted to improve the skills and safety of all workers in the industry. This measure is critical to the success of the Construction sector, as workers possess the necessary skills and knowledge to work efficiently and safely on construction projects.

Moreover, every employer should raise awareness about the importance of upskilling and reskilling. The Government must ensure that all employers embrace a culture of training and development within the industry, for instance, mandatory training for a specific period and strict conditions on worker development.

Figure 30 Workers' Skill Category in Construction Sector





Talent Development as a Strategic Imperative for Sustainable Workforce

The Construction sector helps shape our communities. It faces many challenges, including insufficient training and career development opportunities for its workers (ILO, 2022). A skilled and well-trained workforce is necessary for the success of construction projects. By investing in employee training and development, the sector can ensure its workers have the necessary skills and knowledge to perform their jobs well and safely.

However, the data reflects only a small percentage of training levies, highlighting employers' need to boost training activities. High turnover rates in the Construction sector may negatively affect project productivity and efficiency. Therefore, employers can attract and retain talented workers by providing training and development opportunities critical for the industry's long-term sustainability.

Figure 31 shows while Large employers have the highest number of trained workers (18.4%), the numbers are still low compared to other industries, with SMEs accounting for only 9.1%. Therefore, the Construction sector still faces a significant challenge in workforce development. Talent development is critical to the growth and success of the sector. Investing in education and training can ensure a skilled and knowledgeable workforce, attract and retain talented workers, increase productivity and creativity, better compliance with safety regulations, and gain a competitive advantage.

Figure 31Employees Trained in the Construction Sector by Industry Size







Addressing the Need for Relevant Training and Education

The Construction sector is constantly evolving. Workers must have relevant skills and credentials to perform their jobs effectively, advance their careers and keep the industry competitive. Unfortunately, this is not always the case, as some training and education programmes may not reflect the industry's latest technologies, procedures and regulations.

Training programmes fail to meet industry standards because of inadequate feedback in developing relevant and practical training materials. The solution is to foster closer collaboration between industry experts and training providers to improve employee skills and retrain the workforce.

The Construction sector has a high enrolment in competent training providers at 0.88. The competencies of HRD Corp training providers are monitored based on the Training Effectiveness Evaluation (TEE) developed to ensure registered training providers continuously improve training courses and deliveries through a structured evaluation mechanism for effective learning and development. It is crucial to select a competent training provider to ensure high-quality training. Since the Construction industry mainly involves high technical skills, having a competent training provider is vital.

Figure 32 Training Effectiveness Evaluation (TEE) Framework

Plan				Do	,		Check	Act	
	HRD Corp Schemes	Assessment		Assessment Levels	Time Frame		Score	Performance	
			Output	Level 1 Reaction		o	< 80%	Below Target (BT)	ans
Evaluate	Operational / Functional / Strategic	operational / Output & Level 2 Learning Outcome	erational / Output & Level 2 Learning Outcome	nal / Output & Level 2 Learning Outcome	/ Output & Outcome	Scoring Range	80% - 84%	On Target (OT)	Improvement Plans
"	3.1.2.13g.13		Outcome	Level 3 Behaviour	Immediate - 12 months*	Sco	85% - 89%	Exceeds Target (ET)	Impro
			Out	Level 4 Result	1 year - 5 years*		≥ 90%	Significantly Exceeds Target (ST)	





Challenges and Opportunities in Training and Development of Construction Workforce

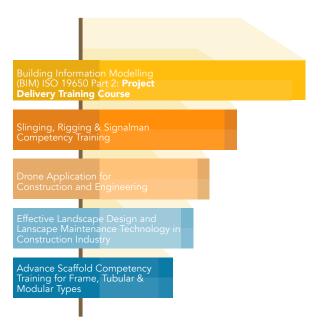
As reported by the Construction Industry Development Board (CIDB) in 2016, the early 1980s witnessed a significant decrease in the number of Construction workers in Malaysia due to heavy reliance on cheap and unskilled foreign labour. Construction employers preferred foreign workers willing to work longer hours for low wages, posing one of the most significant challenges to the industry. Unfortunately, CIDB's 2016 Report also showed that almost 93% of registered foreign workers in the Construction sector are unskilled. As the Construction sector depends heavily on labour, workers' expertise is vital in determining project quality, productivity, and profitability.

According to CEDEFOP (2019), Construction workers are among the most likely occupation to be replaced by automation. As a result, changes in the labour market require workers to acquire new skills and improve existing ones to meet industry demands. However, there is still a gap between the skills workers possess and the skills required by the industry, making it challenging to design courses that meet industry requirements, as noted by the International Labour Organisation (ILO) in 2019.

Developing countries have varying skills gaps that reflect different technological patterns and employment structures. According to DOSM's 2023 Report, 85% of the Malaysian Construction labour force comprises semiskilled workers. However, skilled labour shortages will likely worsen in the long run due to technological advancements and reduced labour supply in developed economies. The Construction sector demands various technical skills and relies on individuals with specific expertise. However, the enrolment index score of 0.03 indicates a low enrolment in technical courses due to the inactive employers in newly covered sectors after the expansion of the PSMB Act 2001. Figure 33 shows the top five technical courses enrolled by the Construction industry. Safety-related courses are the most popular because Construction involves hazardous conditions. Therefore, all workers must attend safety-related courses.

Nevertheless, Construction heavily relies on Engineering-related skills, such as Project Management, AutoCAD, and Project Planning and Control. Therefore, employers need to enrol workers in training courses that are more technical to enhance their skills.

Figure 33
Top Five (5) Technical Courses Enrolled in the Construction Sector









Bridging the Gap: High-Skilled Labour and Advanced Technologies in Malaysia's Construction Sector

The 12MP is a comprehensive blueprint for developing a sustainable economy with inclusive, prosperous and generous values. As for human capital development, Malaysia aims to achieve a 35% highly skilled workforce by 2025. However, recent data from the DOSM Q4 (2022) indicates that most jobs in Malaysia's economic sectors are held by semi-skilled workers, accounting for nearly 62.3%, while high-skilled jobs account for only 24.9%. Therefore, a significant gap in highly skilled workers must be urgently addressed to meet the targets set out in the 12MP.

The Construction industry, in particular, faces challenges in developing a highly skilled workforce, with only 11.3% of jobs classified as highly skilled and nearly 85.0% as semi-skilled. Furthermore, the industry relies heavily on foreign labour due to difficulties obtaining and retaining skilled workers. To address these challenges, the Malaysian Investment Development Authority (MIDA) encourages industries to adopt high technologies and highly skilled labour to reduce dependency on foreign workers. However, the Construction sector needs to catch up in digitalisation compared to other industries that have rapidly adopted new technologies during the pandemic (CIDB, 2022).

In ensuring the Construction sector in Malaysia continues to evolve, CIDB has launched the Construction Strategy Plan 4.0, a 5-year plan aimed at transforming the industry through smart construction. The plan has four (4) strategic thrusts:

- 1) building capacity;
- 2) research, innovation, commercialisation, and entrepreneurship;
- 3) smart integrated technology, innovation, and infrastructure; and
- 4) enhancing the business environment.

As technology adoption and application require skills and expertise, the Construction sector needs to invest in upskilling and reskilling initiatives to increase worker productivity and sector performance. Ensuring the industry has workers with highly technical skills is vital. For example, Construction workers should have at least a professional certificate rather than only a certificate of attendance to ensure the relevancy of their skills.

Figure 34
Level of Certification Based on Courses Enrolled in the Construction Sector



Figure 34 shows the level of certification based on courses enrolled in the Construction sector in 2022. The highest number of certificates were Certificate of Attendance (90.0%), followed by Professional Certificates (10.0%). The data shows that Construction workers have low certification. Therefore, an urgency arises to ensure more Construction workers gain adequate certification and relevant industry skills.

In conclusion, developing a highly skilled workforce is crucial for achieving the goals set out in the 12MP, particularly in the Construction industry. Investing in upskilling and reskilling initiatives reduces dependency on foreign labour and increases productivity and performance in the sector.



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Agriculture, Forestry and Fishing Sector

The Agriculture, Forestry and Fishing sector has been Malaysia's economic backbone for many years. Malaysia's current economy is deeply rooted in Agriculture, contributing to food, security and growth. According to recent data published by DOSM, the Agriculture sector expanded by 1.1% in Q4 of 2022 compared to 1.2% in the previous quarter. In 2022, the Agriculture sector posted a marginal increase of 0.1% against a contraction of 0.2% in 2021.

In terms of employment statistics, the Agriculture sector recorded an increase in the number of jobs, with 480,000 jobs recorded compared to 468,000 in the corresponding quarter of the previous year. In Q4 of 2022, out of the 480,000 jobs, 448,000 were filled while 31,700 were vacant. The sector's filled jobs and vacancies rate were 93.4% and 6.6%, respectively (DOSM, 2022).

Annual Economic Statistics 2022: Agriculture, released by DOSM, stated that the Crops subsector is the main contributor to the total number of jobs, with 432,000 people representing 87% of the workforce. Livestock comes in second (7.3%), followed by Forestry and Logging (3.0%) and Fisheries (2.7%), employing 36,000 persons, 15,000 persons, and 13,200 persons, respectively. The Crops subsector also contributes significantly to the value of the gross output, recording RM76 billion, followed by Livestock (RM19 billion), Forestry and Logging (RM4 billion) and Fisheries (RM2 billion) (DOSM, 2023).

Performance Summary

The Agriculture, Forestry and Fishing sector has consistently grown over the years, contributing to the country's economic development. Employee training and development in this sector is vital to improve productivity, efficiency and build resilience. Figure 35 displays the overall training index for each dimension in the Agriculture, Forestry and Fishing sectors. The results recorded a 0.48 index score which falls into the 'Adopter' category. Therefore, the Agriculture sector can be classified as moderately active in training and development. As a new sector covered by HRD Corp since the expansion of the PSMB Act 2001, the index still shows less activity in upskilling and reskilling programmes. However, the industry is expected to contribute to a higher score index in subsequent years

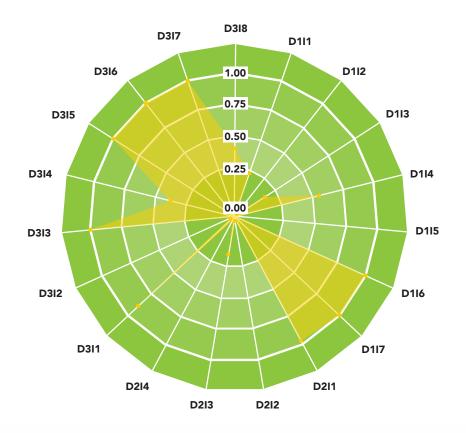


as more employees become eligible under the HRD Corp structured training plan to improve productivity and skills.

The top five (5) active subsectors in the Agriculture, Forestry and Fishing industries with the highest training index scores are as follows:

- 1) Support Activities to Agriculture and Post-Harvest Crop Activities (0.35);
- 2) Mixed Farming (0.34);
- 3) Plant Propagation (0.28);
- 4) Growing of Perennial Crops (0.26); and
- 5) Animal Production (0.25).

Figure 35 Agriculture, Forestry & Fishing Sector Training Index for the year 2022



Reference:

Firm Preparedness and Training Commitment

- **D1I1:** Amount of financial assistance allocated for training per worker
- **D112:** Utilisation rate of HRD Corp
- **D113:** Number of employees
- **D114:** Number of skilled workers
- D115: Enrolment in Recognition of Prior Learning (RPL)
- D116: Availability of training facilities at own premise
- D117: Availability of designated training unit

Worker Skills Development

- **D2I1:** Number of training days attended
- **D2I2:** Enrolment in technical courses
- **D213:** Number of skilled workers who attended certification courses
- **D214:** Enrolment in practical/ hands-on training

- Training Provider Effectiveness
 D3I1: Enrolment in competent
- training provider **D312:** Enrolment with certified trainer
- D3I3: Enrolment in courses with regular content evaluation
- D314: Enrolment in training provider for certification course **D315:** Enrolment in digital training
- D316: Enrolment in regular/ repetitive training courses
- D317: Enrolment in training provider with complete training
- D318: Enrolment with established training provider

Table 20 displays the overall Agriculture, Forestry and Fishing Sector Training Index 2022. The results show that the training performance in Agriculture, Forestry and Fishing is significantly influenced by low performance in Firm Preparedness/Training Commitment and Worker Skills Development. Most of the indicators in these two (2) dimensions recorded low index scores below 0.25, which affects the overall performance of the training index for this sector. Nevertheless, most indicators in the dimension of Training Provider Effectiveness have a high score, above 0.76, contributing to the overall index performance for Agriculture, Forestry and Fishing.

As a newly covered sector effective 2021, 94.5% of registered employers in the Agriculture, Forestry and Fishing Sector is categorised as inactive with less than 25% of levy utilisation or 0.04 and low enrolment in practical/hands-on training and technical courses. In Malaysia, the Internet of Things (IoT) is set to play a critical role in transforming many industries, including Agriculture, Forestry and Fishing. Thus, employee upskilling and reskilling in this sector are crucial to remain resilient and increase productivity. Training programmes may include a combination of technology and improved practices in worker skills development.



Table 20

Agriculture, Forestry & Fishing Sector Training Index Score 2022 **Overall Index Score: 0.48**

AREAS OF STRENGTH

- D116: Available training facilities at own premise (1.00)
- D117: Available designated training unit (1.00)
- High enrolment in courses with regular content evaluation (1.00)
- D3I5: High enrolment in digital training (1.00)
- D3I6: High enrolment in regular/repetitive courses (1.00)
- D3I7: High enrolment in training provider with complete training facilities (1.00)
- D2I1: High number of training days (0.99)
- D3I1: High enrolment in competent training provider (0.89)

AREAS OF IMPROVEMENT

- D318: Less enrolment in established training provider (0.42)
- D114: Less number of skilled workers trained (0.41)
- D3I4: Less enrolment in training provider for certification course (0.33)
- D1I1: Low amount of financial assistance allocated for training per worker (0.24)
- D2I3: Low number of skilled workers who attended certification courses (0.19)
- D1I3: Low number of employees trained (0.10)
- Low utilisation of HRD Corp levy (0.04) D1I2:
- Low enrolment in technical courses (0.01) D2I2:
- D2I4: Low enrolment in practical/hands-on
- training(0.01)
- D3I2: Low enrolment with a certified trainer (0.01)
- D1I5: No enrolment in Recognition of Prior Learning (RPL) (0.00)





Accelerating the Digital Transformation of Agriculture in Malaysia

In the past few years, Malaysia has been undergoing a significant shift towards becoming an endemic nation, which has created new opportunities and challenges across various sectors of its economy. One of the most crucial sectors that have contributed to the country's economic recovery during this transition period is Agriculture. With rapid urbanisation, the demand for food and agricultural products continues to rise, making agriculture an essential economic growth and development sector. Therefore, the productivity of Agricultural workers plays a vital role towards diversifying and shielding the economy from unprecedented events for economic revival. During the pandemic, Malaysia faced a severe labour shortage involving foreign workers in Agriculture due to the movement control order (MCO). Thus, a strategic plan and initiative must be implemented to reduce reliance on foreign labour and improve productivity by adopting digital technologies for efficient operations and new business models in Agriculture.

Internet connectivity and AI are critical to digitalisation in the Agriculture sector of our country. For example, farmers can employ information technology such as satellites, drones, AI, and weather forecasting systems to ensure healthy and productive crops and soil and streamlined processes. Satellites and robotic drones above fields would offer farmers real-time photos of crops rather than relying entirely on human inspection.

With the rise of precision Agriculture and the IoT, digital tools and resources in farming have become more critical than ever before. As a result, more farmers in Malaysia seek digital training opportunities to learn about the latest tools and techniques to manage crops and livestock. The fact that enrolment in digital training has reached an index of 1.00 is a testament to Malaysian farmers' commitment to staying ahead of the curve and embracing new technologies to improve operations. Figure 36 shows the digital training courses enrolled by the Agriculture sector in 2022.

Figure 36
Top Five (5) Digital Training Courses Enrolled in the Agriculture Sector







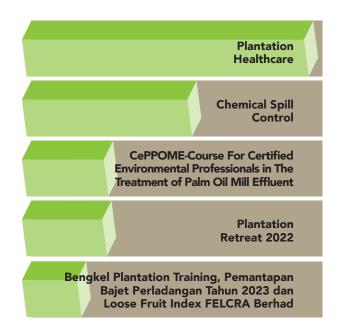
Empowering the Future with Professional and Competent Training Providers

Professional and certified training providers are the backbone in empowering skills and talent development in Agriculture. With the expansion of the PSMB Act 2001, HRD Corp has pledged to serve the nation's human capital needs by adopting quality baseline standards for active HRD Corp trainers. The framework is critical in ensuring the continuous development of all active trainers under HRD Corp throughout their training career. Workers are more likely to sign up for a programme by experienced and knowledgeable trainers. As for the index, the 'High enrolment to competent training provider' indicator recorded a score of 0.89, which indicates a high demand for training programmes.

Meanwhile, every sector demands a specific set of skills, encompassing hard and soft skills, and Agriculture is no exception. Among the essential skills in Agriculture are interpersonal, analytic, managerial, technological, problem-solving and technology skills. The NTI reveals that the Agriculture sector utilised only a small portion of the training levy, being a newly covered sector. Thus, employers must take advantage of the opportunity to equip employees with the necessary skills through professional and certified training providers under HRD Corp.

Based on the training record in 2022, the top five (5) of the industry-based courses enrolled by the Agriculture sector are as follows:

Top Five (5) Industry-based Courses Enrolled in the Agriculture Sector



In conclusion, industry players in the Agriculture sector must be actively involved in employee upskilling and reskilling for the sector to function efficiently. Employers should adopt strategic training measures by matching workers with relevant technical and practical training courses under HRD Corp to meet national and global demands.





A New Generation of Well-Trained Talent in Agriculture

The country currently produces over 470,000 jobs in the Agriculture sector, contributing to 5.5% of the total national jobs. The employment in Agriculture comprised 29,200 skilled workers, 413,700 semi-skilled workers, and 27,200 low-skilled workers.

In today's economy, upskilling and reskilling are necessary components of the agriculture sector. The employment and innovation potential of the current economy can only be realised if employers invest in their employees and provide opportunities to learn new skills and adapt to changing market demands. Failing to invest in skills development can lead to reduced flexibility and resilience of the labour market, mismatching the current abilities of workers and skills needed to thrive in a future-proof economy.

The NTI revealed that the skills gap in the Agriculture sector is exacerbated by low financial assistance allocated for training per worker and fewer employees receiving training. These findings suggest that employers in the Agriculture sector must take steps to adapt to the changing landscape of workforce development. By offering new and exciting ways to engage with potential employees and providing adequate training programmes, employers can help future-proof employee skills and promote a lifelong career in Agriculture.

In conclusion, the Agriculture sector must prioritise workforce development by investing in upskilling and reskilling for better career opportunities through innovative ideas with high impact in food and agriculture.





Perception of Training Participation in Agriculture

Perception plays a crucial role in training participation in Agriculture. A positive perception of Agriculture motivates people to enrol in training programmes and take up farming as a career. If individuals perceive Agriculture as profitable, they will participate in agricultural training programmes to acquire knowledge and skills to succeed in the industry. Other motivating factors for people to participate in training programmes that promote sustainable agriculture include food security, environmental sustainability, and poverty reduction.

Further, several studies have been conducted on youth and their involvement in the Malaysian Agricultural sector. These studies focused on various topics, including the challenges the younger generation face when entering the agriculture sector, the role of education in promoting youth participation in agriculture, and the potential benefits of increased youth involvement in the sector and the economy.

According to Khazanah Research Institute's 2020 study, Agriculture and Fisheries are the least preferred sectors among the youth of Malaysia. The study provides insights into the interest of the youth in agriculture in Malaysia. The study shows that the majority of the youth in Malaysia are disinterested in farming and fishing. In contrast, those interested in Agriculture and Fisheries are predominantly male and come from states with high employment in these sectors. Although the findings are not surprising, it is still a cause for concern, given the importance of these sectors to the country's economy.

Based on the index score, inadequate financial assistance is allocated for training per worker in the Agriculture sector. This lack of funding could impact the quality of training workers receive, leading to a lack of skills and knowledge. Employers and Government agencies must review and increase financial assistance provided for training to ensure that workers in the agriculture sector have access to quality training programmes and can contribute to the industry's growth.

Therefore, it is crucial for training providers to consider public perceptions of Agriculture and to design programmes that address these perceptions in a positive light. For example, training programmes should emphasise the potential benefits of Agriculture and provide practical, hands-on training that demonstrates the profitability and viability of farming as a career. By doing so, more people may be encouraged to participate in agricultural training programmes and pursue a career in Agriculture.





Challenges in Upskilling and Reskilling of the Agriculture Sector

With the rapid advances in technology and the increasing demand for more sustainable and efficient practices, it is becoming increasingly important for workers in the sector to stay up-to-date with the latest skills and knowledge. However, this can be daunting for many, particularly those working in the industry for a long time without access to formal training or education.

As for the index score, there is a significant shortage of trainees trained in Agriculture in Malaysia. The low number of trainees being trained in agriculture negatively impacts the industry. As agriculture plays a critical role in Malaysia's economic development, investing in training more individuals in this field contributes to the growth and sustainability of the industry.

The findings related to the challenges of upskilling and reskilling in the Agriculture sector are discussed below.

1) Lack of awareness

Many people in the Agriculture sector are unaware of the importance of upskilling and reskilling, which hinders their ability to stay updated with the latest technologies and practices (Mustapha, 2017; Brown & Majumdar, 2020).

2) Limited access to training

Most farmers and agricultural workers in rural areas need access to training programmes to help them acquire new skills or update existing skills. Training facilities in rural areas are limited (*Giuliani et al., 2017; Greene, 2021*).

3) Cost of training

The cost of training may be a significant obstacle for many farmers and agricultural workers, mainly small-scale or subsistence farmers. From the data, only 15.7% (1,198 trainees trained) in Agriculture were SME employers, and 84.3% (6,432 trainees trained) under HRD Corp were from Large Enterprises in 2022. Meanwhile, 6.0% (7,630) of trainees were trained for Agriculture from 127,628 employees registered under HRD Corp.

4) Ageing workforce

In Malaysia, Agriculture is still dominated by smallholders with an average age above 55 (DOSM, 2021). The agriculture sector faces an ageing workforce, with many farmers and agricultural workers approaching retirement age. Therefore, it is crucial to upskill and reskill younger farmers to ensure they have the necessary skills to propel the industry forward.

In conclusion, upskilling and reskilling in the Agriculture sector is essential to remain competitive and sustainable. However, the challenges of access to training, cost of training, technological barriers, ageing workforce, changing agricultural practices and lack of formal education need to be addressed to ensure that farmers and agricultural workers can acquire the necessary skills to succeed by pioneering new and innovative ideas that positively impact the industry.







2022 Subsector Training Index Scores Summary

2022 Subsector Training Index Scores Summary

Table 21 lists 229 subsectors out of 238 registered employers in 2022 based on their training index score. Of the registered employers, 60.3% (138) ranked at the 'Beginner' level, 34.6% (78) ranked at the 'Adopter' level, 5.2% (12) ranked at the 'Experienced' level, and only one subsector reached the top level of 'Leader'.

Table 21Subsector Training Index 2022

NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
1	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	Manufacturing	0.76
2	Radio broadcasting	Services	0.70
3	Monetary intermediation	Services	0.64
4	Hospital activities	Services	0.63
5	Processing and preserving of meat	Manufacturing	0.63
6	Manufacture of motor vehicles	Manufacturing	0.61
7	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	Manufacturing	0.59
8	Manufacture of refined petroleum products	Manufacturing	0.54
9	Manufacture of structural metal products, tanks, reservoirs and steam generators	Manufacturing	0.54
10	Water collection, treatment and supply	Services	0.54
11	Wired telecommunications activities	Services	0.54
12	Extraction of crude petroleum	Mining and Quarrying	0.52
13	Computer programming, consultancy and related activities	Services	0.52
14	Manufacture of rubber products	Manufacturing	0.50
15	Architectural and engineering activities and related technical consultancy	Services	0.50
16	Television programming and broadcasting activities	Services	0.49
17	Manufacture of general-purpose machinery	Manufacturing	0.48
18	Higher education	Services	0.47
19	Private security activities	Services	0.47
20	Manufacture of plastics products	Manufacturing	0.46
21	Support activities for transportation	Services	0.45
22	Short-term accommodation activities	Services	0.45
23	Passenger air transport	Services	0.44
24	Electric power generation, transmission and distribution	Services	0.44
25	Retail sale in non-specialised stores	Services	0.44
26	Sound recording and music publishing activities	Services	0.43
27	Manufacture of vegetable and animal oils and fats	Manufacturing	0.42
28	Insurance/Takaful	Services	0.42
29	Transport via railways	Services	0.41



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
30	Postal activities	Services	0.41
31	Data processing, hosting and related activities; web portals	Services	0.40
32	Manufacture of basic iron and steel	Manufacturing	0.40
33	Manufacture of electronic components and boards	Manufacturing	0.39
34	Manufacture of non-metallic mineral products n.e.c.	Manufacturing	0.39
35	Sale of motor vehicles	Services	0.38
36	Manufacture of paper and paper products	Manufacturing	0.38
37	Research and experimental development on natural sciences and engineering	Services	0.38
38	Manufacture of coke oven products	Manufacturing	0.37
39	Activities of holding companies	Services	0.36
40	Printing and service activities related to printing	Manufacturing	0.35
41	Social work activities without accommodation for the elderly and disabled	Services	0.35
42	Sea and coastal water transport	Services	0.35
43	Restaurants and mobile food service activities	Services	0.35
44	Other financial service activities, except insurance and pension funding activities	Services	0.34
45	Other education	Services	0.34
46	Accounting, bookkeeping and auditing activities; tax consultancy	Services	0.34
47	Spinning, weaving and finishing of textiles	Manufacturing	0.34
48	Extraction of natural gas	Mining and Quarrying	0.34
49	Manufacture of glass and glass products	Manufacturing	0.33
50	Advertising	Services	0.33
51	Manufacture of optical instruments and photographic equipment	Manufacturing	0.33
52	Other information service activities	Services	0.32
53	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	Manufacturing	0.32
54	Activities of head offices	Services	0.32
55	Real estate activities with own or leased property	Services	0.32
56	Sawmilling and planing of wood	Manufacturing	0.32
57	Wireless telecommunications activities	Services	0.32
58	Management consultancy activities	Services	0.31
59	Manufacture of dairy products	Manufacturing	0.31
60	Combined facilities support activities	Services	0.30
61	Manufacture of other food products	Manufacturing	0.30
62	Mining of hard coal	Mining and Quarrying	0.30
63	Manufacture of tobacco products	Manufacturing	0.30
64	Manufacture of beverages	Manufacturing	0.30



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
65	Quarrying of stone, sand and clay	Mining and Quarrying	0.30
66	Manufacture of pharmaceuticals, medicinal chemical and botanical products	Manufacturing	0.29
67	Manufacture of furniture	Manufacturing	0.29
68	Support activities for petroleum and natural gas extraction	Mining and Quarrying	0.29
69	Manufacture of gas; distribution of gaseous fuels through mains	Services	0.29
70	Real estate activities on a fee or contract basis	Services	0.29
71	Processing and preserving of fruit and vegetables	Manufacturing	0.29
72	Processing and preserving of fish, crustaceans and molluscs	Manufacturing	0.28
73	Fund management activities	Services	0.28
74	Secondary education	Services	0.28
75	Growing of perennial crops	Agriculture, Forestry and Fishing	0.28
76	Construction of buildings	Construction	0.28
77	Activities of employment placement agencies	Services	0.28
78	Other human health activities	Services	0.28
79	Manufacture of medical and dental instruments and supplies	Manufacturing	0.27
80	Market research and public opinion polling	Services	0.27
81	Trusts, funds and similar financial entities	Services	0.27
82	Waste treatment and disposal	Services	0.27
83	Motion picture, video and television programme activities	Services	0.27
84	Manufacture of special-purpose machinery	Manufacturing	0.27
85	Warehousing and storage	Services	0.27
86	Camping grounds, recreational vehicle parks and trailer parks	Services	0.26
87	Administration of the State and the economic and social policy of the community	Services	0.26
88	Retail trade not in stores, stalls or markets	Services	0.26
89	Organisation of conventions and trade shows	Services	0.26
90	Reinsurance/Retakaful	Services	0.26
91	Satellite telecommunications activities	Services	0.26
92	Remediation activities and other waste management services	Services	0.25
93	Business support service activities n.e.c.	Services	0.25
94	Manufacture of consumer electronics	Manufacturing	0.25
95	Retail sale of other goods in specialised stores	Services	0.25
96	Other professional, scientific and technical activities n.e.c.	Services	0.25
97	Manufacture of parts and accessories for motor vehicles	Manufacturing	0.25
98	Courier activities	Services	0.25
99	Construction of roads and railways	Construction	0.25



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
100	Activities auxiliary to financial service activities, except insurance/takaful and pension funding	Services	0.25
101	Activities of call centres	Services	0.25
102	Gambling and betting activities	Services	0.25
103	Wholesale of household goods	Services	0.24
104	Travel agency and tour operator activities	Services	0.24
105	Pre-primary and primary education	Services	0.24
106	Silviculture and other forestry activities	Agriculture, Forestry and Fishing	0.24
107	Research and experimental development on social sciences and humanities	Services	0.24
108	Materials recovery	Services	0.24
109	Mining of iron ores	Mining and Quarrying	0.24
110	Technical testing and analysis	Services	0.24
111	Office administrative and support activities	Services	0.24
112	Maintenance and repair of motor vehicles	Services	0.24
113	Steam and air conditioning supply	Services	0.23
114	Support activities to agriculture and post-harvest crop activities	Agriculture, Forestry and Fishing	0.23
115	Manufacture of footwear	Manufacturing	0.23
116	Manufacture of other chemical products	Manufacturing	0.23
117	Mining and quarrying n.e.c.	Mining and Quarrying	0.23
118	Manufacture of computers and peripheral equipment	Manufacturing	0.23
119	Activities auxiliary to insurance/takaful and pension funding	Services	0.22
120	Other accommodation	Services	0.22
121	Manufacture of grain mill products, starches and starch products	Manufacturing	0.22
122	Other personal service activities	Services	0.22
123	Manufacture of electric lighting equipment	Manufacturing	0.22
124	Other specialised wholesale	Services	0.22
125	Event catering and other food service activities	Services	0.22
126	Libraries, archives, museums and other cultural activities	Services	0.22
127	Wholesale of machinery, equipment and supplies	Services	0.22
128	Other telecommunications activities	Services	0.22
129	Sale, maintenance and repair of motorcycles and related parts and accessories	Services	0.22
130	Construction of other civil engineering projects	Construction	0.21
131	Manufacture of basic precious and other non-ferrous metals	Manufacturing	0.21
132	Sewerage	Services	0.21
133	Manufacture of jewellery, bijouterie and related articles	Manufacturing	0.21
134	Other specialised construction activities	Construction	0.21



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
135	Manufacture of prepared animal feed	Manufacturing	0.21
136	Support activities for other mining and quarrying	Mining and Quarrying	0.21
137	Other amusement and recreation activities	Services	0.21
138	Construction of utility projects	Construction	0.20
139	Activities of trade unions	Services	0.20
140	Renting and leasing of other machinery, equipment and tangible goods	Services	0.20
141	Manufacture of games and toys	Manufacturing	0.20
142	Cleaning activities	Services	0.20
143	Beverage serving activities	Services	0.20
144	Retail sale via stalls and markets	Services	0.20
145	Waste collection	Services	0.20
146	Activities of business, employers and professional membership organisations	Services	0.20
147	Sports activities	Services	0.20
148	Veterinary activities	Services	0.20
149	Wholesale of food, beverages and tobacco	Services	0.19
150	Inland water transport	Services	0.19
151	Software publishing	Services	0.19
152	Manufacture of other fabricated metal products; metalworking service activities	Manufacturing	0.19
153	Manufacture of batteries and accumulators	Manufacturing	0.19
154	Activities of other membership organisations	Services	0.19
155	Sale of motor vehicle parts and accessories	Services	0.19
156	Other land transport	Services	0.19
157	Other social work activities without accommodation n.e.c.	Services	0.18
158	Animal production	Agriculture, Forestry and Fishing	0.18
159	Installation of industrial machinery and equipment	Manufacturing	0.18
160	Electrical, plumbing and other construction installation activities	Construction	0.18
161	Temporary employment agency activities	Services	0.18
162	Mixed farming	Agriculture, Forestry and Fishing	0.18
163	Manufacture of transport equipment n.e.c.	Manufacturing	0.17
164	Other manufacturing n.e.c.	Manufacturing	0.17
165	Casting of metals	Manufacturing	0.17
166	Manufacture of other electrical equipment	Manufacturing	0.17
167	Educational support activities	Services	0.17
168	Retail sale of other household equipment in specialised stores	Services	0.17
169	Building completion and finishing	Construction	0.17



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
170	Manufacture of musical instruments	Manufacturing	0.17
171	Plant propagation	Agriculture, Forestry and Fishing	0.17
172	Other human resources provision	Services	0.16
173	Landscape care and maintenance service activities	Services	0.16
174	Demolition and site preparation	Construction	0.16
175	Logging	Agriculture, Forestry and Fishing	0.16
176	Growing of non-perennial crops	Agriculture, Forestry and Fishing	0.16
177	Residential nursing care facilities	Services	0.15
178	Non-specialised wholesale trade	Services	0.15
179	Retail sale of food, beverages and tobacco in specialised stores	Services	0.15
180	Repair of fabricated metal products, machinery and equipment	Manufacturing	0.15
181	Retail sale of information and communications equipment in specialised stores	Services	0.15
182	Pension funding	Services	0.15
183	Medical and dental practice activities	Services	0.14
184	Publishing of books, periodicals and other publishing activities	Services	0.14
185	Manufacture of knitted and crocheted apparel	Manufacturing	0.14
186	Freight air transport	Services	0.14
187	Retail sale of cultural and recreation goods in specialised stores	Services	0.14
188	Specialised design activities	Services	0.13
189	Support services to forestry	Agriculture, Forestry and Fishing	0.13
190	Fishing	Agriculture, Forestry and Fishing	0.13
191	Wholesale of agricultural raw materials and live animals	Services	0.13
192	Creative, arts and entertainment activities	Services	0.13
193	Renting and leasing of personal and household goods	Services	0.12
194	Renting and leasing of motor vehicles	Services	0.12
195	Gathering of non-wood forest products	Agriculture, Forestry and Fishing	0.12
196	Other reservation service and related activities	Services	0.12
197	Aquaculture	Agriculture, Forestry and Fishing	0.12
198	Manufacture of other textiles	Manufacturing	0.12
199	Building of ships and boats	Manufacturing	0.11
200	Security systems service activities	Services	0.11
201	Retail sale of automotive fuel in specialised stores	Services	0.11
202	Repair of personal and household goods	Services	0.10
203	Legal activities	Services	0.10
204	Mining of non-ferrous metal ores	Mining and Quarrying	0.10



NO.	SUBSECTOR	ECONOMIC SECTOR	INDEX VALUE
205	Wholesale on a fee or contract basis	Services	0.09
206	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	Manufacturing	0.09
207	Manufacture of wearing apparel, except fur apparel	Manufacturing	0.09
208	Residential care activities for the elderly and disabled	Services	0.09
209	Repair of computers and communication equipment	Services	0.08
210	Photographic activities	Services	0.08
211	Manufacture of products of wood, cork, straw and plaiting materials	Manufacturing	0.06
212	Manufacture of wiring and wiring devices	Manufacturing	0.04
213	Activities of extraterritorial organisations and bodies	Services	0.00
214	Activities of households as employers of domestic personnel	Services	0.00
215	Hunting, trapping and related service activities	Agriculture, Forestry and Fishing	0.00
216	Leasing of intellectual property and similar products, except copyrighted works	Services	0.00
217	Manufacture of air and spacecraft and related machinery	Manufacturing	0.00
218	Manufacture of communication equipment	Manufacturing	0.00
219	Manufacture of domestic appliances	Manufacturing	0.00
220	Manufacture of man-made fibres	Manufacturing	0.00
221	Manufacture of measuring, testing, navigating and control equipment; watches and clocks	Manufacturing	0.00
222	Manufacture of military fighting vehicles	Manufacturing	0.00
223	Manufacture of railway locomotives and rolling stock	Manufacturing	0.00
224	Manufacture of sports goods	Manufacturing	0.00
225	Manufacture of weapons and ammunition	Manufacturing	0.00
226	Mining of lignite	Mining and Quarrying	0.00
227	Other residential care activities	Services	0.00
228	Residential care activities for mental retardation, mental health and substance abuse	Services	0.00
229	Transport via pipeline	Services	0.00





SUPPLEMENTARY ANALYSIS

- Active Employers
- Inactive Employers

Active Employers

The NTI measurement consists of two (2) groups of employers: active employers and inactive employers. Active employers are those with a record of training activities based on the financial assistance granted in 2022. Active employers are also considered as those who have actively provided employee training. About 30% (24,515) of the HRD Corp registered employers participated in training and development last year. SMEs are the predominant form of enterprise, accounting for 78.6% of all active employers in 2022. In Malaysia, SMEs constitute 97.2% of all business establishments, producing 38.2% of the GDP and providing employment for 7,300,000 people (OECD, 2022). Thus, the need for upskilling and reskilling has become the primary concern among SME employers.

The breakdown of active employers according to sectors and size are as follows:

Figure 38Active Employers by Industry Size Total Active Employers = 24,515

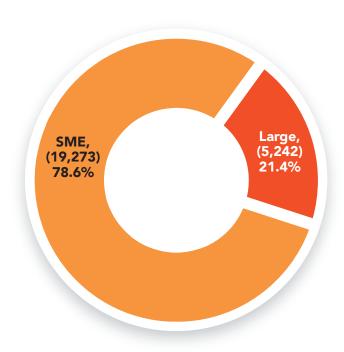
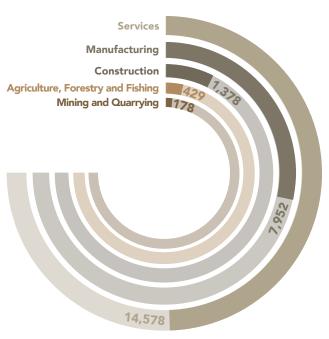


Figure 39Active Employers by Sectors
Total Active Employers = 24,515



Based on the HRD Corp statistics in Figure 39, 96.9% of the training involved is led by the Services and Manufacturing sector. As the country's economic growth mainly depends on the increase in the production of goods and services, Manufacturing and Services are the key sectors that should continuously prioritise upskilling and reskilling as crucial investments.

However, from the NTI overall dimensions perspective, there is still room for improvement from employers under this category in terms of Worker Skills Development, such as certification or recognition, areas of competencies and the quality of training or method of training (practical and theory) to ensure knowledge can be conveyed effectively to employees.

Based on active employers participating in training and development in 2022, 68.3% are from existing subsectors, while 31.7% are newly registered employers after the expansion of the PSMB Act



2001. Employers from the existing subsectors with an average year of establishment of 10 years contributed towards a large portion of the training index scores. Such industries are mature, stable and actively utilise levies for training and development.

Worker Skills Development and Training Providers drive the index scores of top employers through participation in digital learning, availability of training facilities, and enrolment with established training providers. According to Cognizant (2020), digital learning is becoming the preferred way of learning, whereas technological advancements have enabled more flexibility in conducting training. Therefore, digital learning is the way forward in employee training and development for greater adaptability among the workforce.

Pos Malaysia Berhad recorded the highest score in the Transportation and Storage industry attributed to the Worker Skills Development dimension. The employer has strength in Firm Preparedness with high levy utilisation, high training participation in hard and soft skills, and enrolment in digital training. In order to achieve long-term goals with new technologies and modes of operation, Pos Malaysia is actively investing in digital upskilling and other critical areas of training to ensure that 20% of employees are trained through the Future Skills programme by 2025, and 50% of training is delivered digitally (on-the-go) by 2025 (Pos Malaysia, 2021).

Table 22Top 10 Employers With High Training Index Scores





As for employers under the Water Supply, Sewerage, Waste Management and Remediation Activities category, Pengurusan Air Selangor Sdn Bhd is among the top employers actively training employees and the high index score is attributed to the Worker Skills Development and Training Provider dimensions. Based on the Industrial Skills Framework for Water and Sewerage Services (2020), there are a variety of skill competencies (soft skills and technical skills) for employees in this subsector to succeed in their job roles. These include communication, supervisory skills, computer and report writing, developing, analysing, managing and evaluating optimisation programmes for the water treatment processes, and identifying and developing safety, health, environmental and quality assurance standard procedures.

In summary, employers have different areas of strength in training participation to upskill and reskill employees. With the increasing number of registered employers, training activities are expected to grow in the coming years.



Inactive Employers

Figure 40 and Table 23 provide a clear picture of inactive employers by sector, revealing that the number of inactive employers exceeded the number of active employers by a staggering 70%. The most concerning aspect of this data is that the Services sector is the most severely affected, with 72.7% of employers being inactive. Manufacturing also had a substantial percentage of inactive employers at 14%. On the other hand, Mining and Quarrying, Construction, Agriculture, Forestry and Fishing had significantly lower percentages of inactive employers at only 0.4%, 9.5%, and 3.4%, respectively. The reasons for discrepancies between active and inactive employers may be multifaceted. For instance, the expansion of the PSMB Act 2001 in 2021, which included new sectors such as Construction and Agriculture, Forestry and Fishing, may have contributed to many inactive employers.

However, despite the expansion of the PSMB Act 2001, the Services sector had the highest number of inactive employers at 41,585. Therefore, inactive employers should encourage employees to engage in activities that promote lifelong learning, as it is a critical aspect of employee development.

Figure 40 Inactive Employers According to Sectors

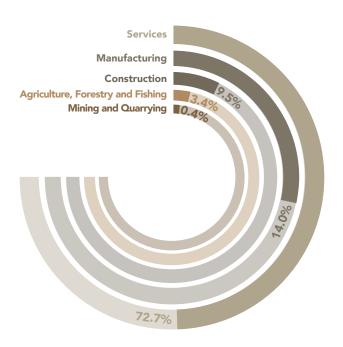


Table 23Inactive Employers According to Sectors

Sectors	No. of Employers
Services	41,585
Manufacturing	8,008
Construction	5,422
Agriculture, Forestry & Fishing	1,933
Mining & Quarrying	243
TOTAL	57,191

Addressing the urgency of employer participation in employee learning and development is vital to minimise the negative impact on employees and employers. Inactive employers risk losing their competitive edge in the market, while employees may feel undervalued and leave the organisation. Therefore, employers must foster organisational learning and development to ensure long-term success.

There are many reasons employers may refrain from participating in the learning and development of employees. One of the most significant factors is cost. According to a 2021 survey conducted by Bank Negara Malaysia, training programmes can be costly and seen as a financial burden by some employers, especially SMEs with limited budgets. However, HRD Corp, a leading lifelong learning agency, has spearheaded several initiatives to make learning and development accessible to all. Employers must realise that the benefits of investing in employee training and development outweigh the cost factor.

Another factor is the prioritisation of business objectives. Some employers focus only on immediate results and tangible outcomes, while employees are regarded as short-term resources instead of long-term investments. The need for greater awareness of the benefits of training and development is a crucial factor that needs to be addressed. According to a 2022 survey by Randstad, 85% of respondents showed interest in learning and development, but only 36% had opportunities for training and development. Employers must develop new strategies to create a more sustainable workforce by aligning training goals with business objectives.



On the other hand, some employers may need more resources, such as in-house trainers or training facilities, to effectively implement training programmes. Despite a few employees, SMEs need designated departments focused on learning and development (Abdullah et al., 2020). Therefore, it is crucial for employers to understand the benefits of training programmes and to invest in employee training and development for greater productivity, job satisfaction and organisational growth.

Moreover, a survey conducted by TG Group, a workforce solutions consultant from Singapore, found that 67% of respondents from Malaysia cited resistance to change as the main reason hindering an employer's training and growth. Sometimes the organisation is satisfied with its current methods and sees no need for change,

even if it improves employee skills. Modern technology requires new skills, and employers must adapt when the work culture changes or otherwise risk productivity and sustainability.

In summary, while several variables contribute to the lack of commitment to employee training and development, it is widely recognised as an essential investment for employees to increase competitiveness.

Employers must understand the benefits of training programmes and invest in human capital development. Employers can build a more sustainable workforce for continued growth by aligning training goals with business objectives and investing in human capital development.





CONCLUSION

Ascertaining the state of our current achievement in the global labour market and the areas for improvement is essential for policymakers, investors, industry players, and workers. By acknowledging the present situation, Malaysia can create effective strategies and policies to improve the country's labour force.

To that extent, the NTI has been developed in collaboration with academia, research organisations, and industry representatives to support this endeavour. The Index possesses the essential attributes to serve as a reference for assessing lifelong learning initiatives in Malaysia.

As a roadmap for formulating and implementing a sustainable workforce strategic plan, the NTI framework is comprehensive and covers various industries and sectors. It offers an all-encompassing evaluation of the training development capacity and dedication of employers in Malaysia. In addition, the Index is an effective means of monitoring progress and comprehending the influence of training development on the skills and productivity of the workforce.

A high index score approaching 1.00 reflects a progressive country or industry that provides education and training opportunities for workers throughout their work lives. It also indicates that the country or industry strongly emphasises lifelong learning and established systems to support this initiative, such as flexible

and accessible education and training programmes, supportive policies and regulations and investment in education and skills development.

Strong Focus on Lifelong Learning in Malaysia

With an index score of 0.70, Malaysia has become an 'Experienced' nation in human capital development. The country emphasises providing education and training opportunities for individuals throughout their working lives. The results show that in Malaysia, many organisations have dedicated units for training or training facilities at their premises, indicating a commitment to employees' training and development.

For Malaysia to become a 'Leader' in lifelong learning or human capital development, addressing the training challenges faced by SMEs is necessary. SMEs often face financial and time constraints in employee training, which has limited their ability to provide ongoing learning and development opportunities. Due to limited resources, SMEs experience challenges funding training programmes and allowing employees to take time off for training.

By addressing the unique challenges SMEs face, Malaysia can ensure that all businesses have equal opportunities to provide continuous learning and development for employees, contributing to the overall growth of the country's economy and workforce.



Digitalisation Drives Training Activities in the Manufacturing and Services Industries

Based on findings of the NTI, digitalisation drives training activities in the Manufacturing and Services industries, although less in other industries, such as Agriculture, Mining & Quarrying and Construction. As technology and business practices are constantly evolving, organisations in Manufacturing and Services industries need to enhance employees' skills and knowledge to remain competitive. Through training participation, organisations can ensure employees have the latest skills and knowledge necessary to adapt to changes and support organisational growth.

Agriculture, Mining & Quarrying, and Construction industries must fully utilise technology-assisted training methods to increase efficiency and accessibility. Therefore, it is essential to promote the adoption of technological advancements across all sectors.

NTI, The New Measurement for Lifelong Learning in Malaysia

Investing in training and development is critical to sustaining business growth and success (*University of Ottawa, 2021*). Establishing the NTI will help propel a culture of training and development to achieve a high standard of human capital development and quality talent in Malaysia.

The development of the index measures the average change to forecast events and provides a vital overview for policymakers to develop appropriate policies in the future. The underlying methodology of the NTI depicts the overarching characteristics and status of training and development at the national and sectoral levels, which significantly impacts policymaking.

In addition, the NTI sheds light on training activities in various subsectors. As industries shift and expand overnight, so do job descriptions and roles. According to the Corporate Finance Institute, learning new things reinforces fundamental soft skills, such as goal setting, self-discipline, creativity, critical thinking, time management, problem-solving and adaptability.

Professionals prioritise lifelong learning to remain relevant with in-demand skills and better job opportunities. In this regard, the rise of digital learning has made it possible to upskill and reskill, regardless of stage in life or where one lives.



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Summary of Training Index by Subsectors 2022 Table 24

	Overall	D111	D112	D113	D114	D115	D116	D117	D2I1	D2I2	D213	D214	D311	D312	D313	D314 [D315	D316	D317	D318
							NAT	NATIONAL		1	1									
National	0.70	0.55	0.13	0.53	0.71	0.20	1.00	1.00	08.0	0.35	0.44	0.34	0.88	0.02	1.00	0.62	1.00	1.00	1.00	0.43
							SEC	SECTORS												
Manufacturing	86.0	0.83	0.29	1.00	1.00	00:00	1.00	1.00	1.00	69:0	0.99	0.63	0.88	0.02	1.00	0.88	1.00	1.00	1.00	0.42
Services	0.85	0.44	0.11	0.38	0.63	1.00	1.00	1.00	89.0	1.00	0.35	1.00	0.88	0.02	1.00	0.54	1.00	1.00	1.00	0.43
Mining & Quarrying	0.77	1.00	0.19	1.00	0.98	00.00	1.00	1.00	98.0	0.01	0.49	0.02	0.89	0.01	1.00	1.00	1.00	1.00	1.00	0.46
Construction	0.44	0.24	0.04	0.15	0.52	00:00	1.00	1.00	0.48	0.03	0.19	0.02	0.88	0.02	1.00	0.34	1.00	1.00	1.00	0.40
Agriculture, Forestry & Fishing	0.48	0.24	0.04	0.10	0.41	00:00	1.00	1.00	0.99	0.01	0.19	0.01	0.89	0.01	1.00	0.33	1.00	1.00	1.00	0.42
							SUBS	SUBSECTORS												
Accounting, bookkeeping and auditing activities; tax consultancy	0.34	0.22	0.09	90:0	0.62	00:00	1.00	1.00	0.08	0.05	80.0	60:0	0.87	0.01	1.00	0.02	1.00	1.00	1.00	0.54
Activities auxiliary to financial service activities, except insurance/takaful and pension funding	0.25	0.13	0.07	0.04	0.37	0.00	1.00	1.00	0.03	0.01	0.12	0.01	0.88	0.01	1.00	0.02	1.00	1.00	1.00	0.39
Activities auxiliary to insurance/takaful and pension funding	0.22	0.10	0.03	90:0	0.28	00:00	1.00	1.00	0.03	0.00	0.10	00:00	0.87	0.02	1.00	0.29	1.00	1.00	1.00	0.51
Activities of business, employers and professional membership organisations	0.20	0.11	0.05	0.02	0.25	00:00	1.00	1.00	0.03	0.00	0.05	00.00	0.88	0.01	1.00	0.23	1.00	1.00	1.00	0.43
Activities of call centres	0.25	0.21	90:0	0.02	0.37	00:00	1.00	1.00	0.03	0.00	0.08	0.04	0.87	0.01	1.00	0.07	1.00	1.00	1.00	0.39
Activities of employment placement agencies	0.28	0.13	0.05	0.56	0.26	00:00	1.00	1.00	0.02	0.01	0.12	0.02	0.88	0.02	1.00	0.13	1.00	1.00	1.00	0.41
Activities of extraterritorial organisations and bodies	0.00	0.00	0.00	0.00	0.00	00:00	0.00	0.00	0.00	0.00	0.00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Activities of head offices	0.32	0:30	0.14	0.11	0.74	00:00	1.00	1.00	0.05	0.01	0.16	00.00	0.87	0.01	1.00	0.37	1.00	1.00	1.00	0.47
Activities of holding companies	0.36	0.20	0.10	0:07	0.52	0.00	1.00	1.00	90.0	0.10	60:0	0.11	0.88	0.01	1.00	0.10	1.00	1.00	1.00	0.45
Activities of households as employers of domestic personnel	0.00	0.00	0.00	0.00	0.00	00:00	0.00	0.00	0.00	0.00	0.00	00:00	00:00	0.00	00.00	0.00	0.00	0.00	0.00	0.00
Activities of other membership organisations	0.19	0.10	0.09	0.03	0.24	00:00	1.00	1.00	0.02	0.00	0.05	00.00	0.89	0.01	1.00	00:00	1.00	1.00	1.00	0.53
Activities of trade unions	0.20	0.17	0.09	0.03	0.00	00:00	00:00	1.00	90.0	00:00	0.16	0.00	0.00	0.01	1.00	1.33	1.00	00:00	00:00	0.64
Administration of the State and the economic and social policy of the community	0.26	0.46	0.26	0.03	0.57	00:00	1.00	1.00	0.03	0.00	0.08	00.00	0.85	0.01	1.00	0.16	1.00	1.00	1.00	0.50
Advertising	0.33	0.17	0.14	0.05	0.29	0.00	1.00	1.00	0.15	0.04	90:0	0.03	0.85	0.02	1.00	0.03	1.00	1.00	1.00	0.42
Animal production	0.18	0.07	0.03	0.01	0.18	0.00	1.00	1.00	0.01	0.01	90.0	00:00	0.87	0.01	1.00	0.19	1.00	1.00	1.00	0.40



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	Index	D111	D112	D113	D114	D115	D116	D117	D2I1	D212 [D2I3 D	D2I4	D3I1	D312 E	D313 [D314 D	D315 D316	l6 D3I7	D318	_{so}
Aquaculture	0.12	0.02	0.01	00:00	0.07	00:00	1.00	1.00	0.01	0.00	0.02 0	00:00	0.89	0.01	1.00	0.00	1.00 0.00	1.00	0.51	_
Architectural and engineering activities and related technical consultancy	0.50	0.23	0.18	0.07	0.39	00:00	1.00	1.00	0.07	0.24	0.10	0.53	0.89	0.02	1.00	0.42	1.00 1.00	00 1.00	0.44	4
Beverage serving activities	0.20	0.04	90.0	0.02	0.07	00.00	1.00	1.00	0.02	0.03	0.03 0	0.01	06:0	0.03	1.00	0.19	1.00 1.00	1.00	0.39	6
Building completion and finishing	0.17	0.05	0.04	0.02	0.17	00:00	1.00	1.00	0.02	00:0	0.04 0	00:00	0.88	0.02	1.00	0.05	1.00 1.00	1.00	0.35	2
Building of ships and boats	0.11	0.15	0.03	00:00	0.16	00:00	0.00	1.00	0.03	00:0	0.02 0	00:00	00.00	10.0	1.00	0.24	1.00 0.00	00.00	0.59	6
Business support service activities n.e.c.	0.25	0.13	0.07	0.04	0.36	00:00	1.00	1.00	0.03	0.03	0.08	0.03	0.88	0.02	1.00	0.17	1.00 1.00	1.00	0.47	_
Camping grounds, recreational vehicle parks and trailer parks	0.26	0.15	0.03	0.12	0.65	00:00	0:50	1.00	0.04	00:00	0.18 0	00:00	0.89	0.02	1.00	0.00	1.00 1.00	00.0	0.52	2
Casting of metals	0.17	0.07	0.09	0.04	0.16	00.00	1.00	1.00	0.01	0.00	0.06	00.0	0.88	0.01	1.00	0.00	1.00 1.00	1.00	0.35	2
Cleaning activities	0.20	0.08	0.07	0.02	0.11	00:00	1.00	1.00	0.02	0.02	0.04 0	0.03	0.88	0.02	1.00	0.02	1.00 1.00	00 1.00	0.36	9
Combined facilities support activities	0:30	0.24	0.22	0.05	0.37	0.03	1.00	1.00	0.05	0.02	0.11 0	0.03	0.89	0.01	1.00	0.31	1.00 1.00	1.00	0.43	m
Computer programming, consultancy and related activities	0.52	0.37	0.23	0.09	0.51	0.00	1.00	1.00	0.14	0.25	0.12 0	0.24	0.88	0.02	1.00	1 19:0	1.00 1.00	1.00	0.46	9
Construction of buildings	0.28	0.09	0.05	0.02	0.25	00:00	1.00	1.00	0.05	0.06	0.06	0.07	0.88	0.02	1.00	0.12	1.00 1.00	1.00	0.37	_
Construction of other civil engineering projects	0.21	0.07	0.04	0.02	0.18	0.00	1.00	1.00	0.04	0.01	0.04 0	0.02	0.89	0.02	1.00	0.15	1.00 1.00	1.00	0.40	0
Construction of roads and railways	0.25	0.11	90:0	0.03	0.27	00:00	1.00	1.00	0.04	0.03	0.07	0.02	0.89	0.02	1.00	0.24	1.00 1.00	1.00	0.41	_
Construction of utility projects	0.20	0.08	90:0	0.02	0.18	00:00	1.00	1.00	0.02	0.00	0.07 0	00:00	06:0	0.02	1.00	0.75	1.00 1.00	1.00	0.44	4
Courier activities	0.25	0.12	0.12	0.03	0.20	00:00	1.00	1.00	0.02	0.03	0.10	0.02	0.90	0.02	1.00	0.06	1.00 1.00	00 1.00	0.39	6
Creative, arts and entertainment activities	0.13	0.13	0.02	0.01	0.09	00:00	0.50	1.00	0.02	0.00	0.01	00:00	0.84	0.03	1.00	0.00	1.00 1.00	1.00	0.38	
Data processing, hosting and related activities, web portals	0.40	0.29	0.20	0.08	0.51	0.00	1.00	1.00	0.10	0.09	0.12 0	0.07	0.88	0.01	1.00	0.47	1.00 1.00	1.00	0.42	2
Demolition and site preparation	0.16	0.07	0.02	0.01	0.17	00:00	1.00	1.00	0.02	0.00	0.03 0	00:00	0.88	0.02	1.00	0.01	1.00 1.00	1.00	0.44	4
Educational support activities	0.17	0.04	0.05	0.03	0.17	00:00	1.00	1.00	0.01	00:00	0.05	00:00	0.90	0.02	1.00	0.52	1.00 1.00	1.00	0.37	7
Electric power generation, transmission and distribution	0.44	0.28	0.24	0.25	0.50	0.00	1.00	1.00	0.05	0.07	0.17 0	0.15	0.89	0.01	1.00	1.85	1.00 1.00	1.00	0.48	
Electrical, plumbing and other construction installation activities	0.18	90.0	0.04	0.01	0.13	0.00	1.00	1.00	0.02	0.01	0.03 0	0.01	0.88	0.02	1.00	0.09	1.00 1.00	1.00	0.42	2
Event catering and other food service activities	0.22	0.05	0.07	0.17	60:0	0.00	1.00	1.00	0.04	0.02	0.04	0.02	0.91	0.02	1.00	0.12	1.00 1.00	1.00	0.33	<u></u>
Extraction of crude petroleum	0.52	0.71	0.38	0.78	0.88	00:00	1.00	1.00	01.0	0.04	0.21 0	0.10	0.88	0.02	1.00	1.06	1.00 1.00	1.00	0.45	2
Extraction of natural gas	0.34	0.17	0.42	0.11	0.29	00:00	1.00	1.00	0.07	0.00	0.18 0	00:00	0.95	0.02	1.00	1.54 0	0.00 1.00	1.00	0.50	0
Fishing	0.13	0.04	0.02	0.01	0.09	00:00	1.00	1.00	0.01	00:00	0.02	00:00	0.91	0.03	1.00	0.11	1.00 1.00	1.00	0.55	2
Freight air transport	0.14	0.07	90.0	0.03	90:0	00:00	1.00	1.00	0.01	0.00	0.02 0	00:00	0.88	0.01	1.00	0.03	1.00 1.00	1.00	0.29	6
Fund management activities	0.28	0.20	0.10	0.12	0.67	00:00	1.00	1.00	0.04	0.02	0.11 0	0.01	0.88	0.01	1.00	0.07	1.00 1.00	1.00	0.44	4
Gambling and betting activities	0.25	0.10	0.08	0.03	0.28	0.00	1.00	1.00	0.02	0.00	0.16 0	0.00	0.88	0.01	1.00	0.02	1.00 1.00	1.00	0.57	_



	Overall	D1111	D112	D113	D114	D115	D116	D117	DZI1	D212	D213	D214	D311	D312	D313	D314	D3I5	D316	D317	D318
Gathering of non-wood forest products	0.12	0.01	0.01	00.00	0.09	00.00	0.00	1.00	0.14	0.00	0.01	00:00	00.00	0.01	1.00	00:00	00:00	0.00	00:00	0.36
Growing of non-perennial crops	0.16	0.05	0.05	0.01	0.17	00:00	1.00	1.00	0.02	0.00	0.03	00:00	0.87	0.02	1.00	0.02	1.00	1.00	1.00	0.39
Growing of perennial crops	0.28	0.09	0.04	0.02	0.20	0.00	1.00	1.00	0.12	0.02	0.05	0.02	0.89	0.01	1.00	0.16	1.00	1.00	1.00	0.42
Higher education	0.47	0.25	0.36	0.18	0.59	00:00	1.00	1.00	0.05	0.23	0.21	0.12	0.89	0.01	1.00	0.08	1.00	1.00	1.00	0.41
Hospital activities	0.63	0.37	0.43	0.12	0.83	0.00	1.00	1.00	0.16	0.20	0.37	0.37	0.90	0.02	1.00	1.14	1.00	1.00	1.00	0.40
Hunting, trapping and related service activities	0.00	0.00	0.00	00:00	0.00	00.00	00:00	0.00	00:00	00:00	00:00	00:00	0.00	00:00	0.00	0.00	00:00	00:00	00:00	00.00
Inland water transport	0.19	0.21	0.14	0.03	0.16	0.00	1.00	1.00	0.03	0.00	0.05	00:00	0.89	0.01	1.00	0.07	1.00	0.00	1.00	0.37
Installation of industrial machinery and equipment	0.18	90.0	0.04	0.02	0.20	00:00	1.00	1.00	0.02	00:00	90:0	00:00	0.90	0.02	1.00	0.15	1.00	1.00	1.00	0.48
Insurance/Takaful	0.42	0.27	0.13	0.09	0.59	0.00	1.00	1.00	0.05	0.14	0.25	0.10	0.88	0.02	1.00	0.11	1.00	1.00	1.00	0.44
Landscape care and maintenance service activities	0.16	0.08	0.03	0.01	0.09	00:00	1.00	1.00	0.02	00:00	0.03	00:00	06:0	0.02	1.00	0.19	1.00	1.00	1.00	0.53
Leasing of intellectual property and similar products, except copyrighted works	0.00	0.00	0.00	00:00	0.00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	0.00	0.00	00:0	0.00	0.00
Legal activities	0.10	0.01	0.01	0.01	0.05	0.00	1.00	1.00	0.00	00:00	0.01	00:00	0.87	0.02	1.00	00:0	1.00	1.00	1.00	0.52
Libraries, archives, museums and other cultural activities	0.22	0.13	0.09	90:0	0.21	0.00	1.00	1.00	0.04	00:00	0.08	00:00	0.90	0.03	1.00	0.08	1.00	1.00	1.00	0:30
Logging	0.16	0.07	0.03	0.01	90:0	0.00	1.00	1.00	0.02	00:00	0.03	00:00	0.89	0.01	1.00	0.14	1.00	1.00	1.00	0.44
Maintenance and repair of motor vehicles	0.24	0.15	0.12	0.03	0.14	0.00	1.00	1.00	0.05	0.01	0.04	0.03	0.88	0.01	1.00	0.04	1.00	1.00	1.00	0.37
Management consultancy activities	0.31	0.15	0.07	0.07	0.41	0.00	1.00	1.00	0.08	0.05	0.09	0.05	0.88	0.02	1.00	0.19	1.00	1.00	1.00	0.45
Manufacture of air and spacecraft and related machinery	0.00	00:00	0.00	00.00	00:00	00:00	00:00	00:00	0.00	00:00	00:00	0.00	0.00	00:00	00.00	00:00	0.00	00:00	0.00	0.00
Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	0.59	0.36	0.43	0.14	0.58	00:00	1.00	1.00	0.11	0.26	0.23	0.34	0.88	0.02	1.00	0.92	1.00	1.00	1.00	0.42
Manufacture of basic iron and steel	0.40	0.29	0.29	0.08	0.36	0.00	1.00	1.00	0.07	0.09	0.14	0.11	0.88	0.02	1.00	0.34	1.00	1.00	1.00	0.41
Manufacture of basic precious and other non-ferrous metals	0.21	0.12	0.07	0.04	0.32	00:00	1.00	1.00	0.04	00:00	90:0	00.00	0.88	0.03	1.00	0.01	1.00	1.00	1.00	0.54
Manufacture of batteries and accumu- lators	0.19	90.0	0.08	0.01	0.25	00.00	1.00	1.00	90:0	0.00	0.05	00:00	0.85	0.04	1.00	00:00	0.00	00:00	00:00	0.64
Manufacture of beverages	0:30	0.16	0.16	0.03	0.22	0.00	1.00	1.00	0.15	0.01	0.05	0.00	0.87	0.01	1.00	0.04	1.00	1.00	1.00	0.37
Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	0.09	0.05	0.00	0.00	0.15	00:00	0.00	1.00	0.02	00:00	0.03	00:00	00:00	0.01	1.00	00:00	1.00	00:00	00:00	0.00
Manufacture of coke oven products	0.37	0.37	0.43	0.13	0.58	0.00	1.00	1.00	90.0	0.00	0.18	0.01	0.88	0.01	1.00	0.82	1.00	1.00	1.00	0.47
Manufacture of communication equipment	0.00	00:00	0.00	0.00	0.00	00.00	00:00	00:00	0.00	00:00	00:00	0.00	00:00	00:00	0.00	00.0	0.00	00:00	0.00	0.00
Manufacture of computers and peripheral equipment	0.23	0.28	0.68	0.13	1.00	00:00	0.50	1.00	0.01	00.00	0.07	00:00	0.91	0.01	1.00	00:00	1.00	00:00	00:00	0.38



	Overall											_						_		
	Index	D111	D112	D113	D114	D115	D116	D117	D2I1	D212	D2I3	D2I4	D3I1	D3I2	D3l3	D314	D315	D3l6	D3I7	D3I8
Manufacture of consumer electronics	0.25	0.13	0.15	0.03	0.39	0.00	1.00	1.00	0.03	0.00	0.13	0.00	0.91	0.02	1.00	0.01	1.00	1.00	1.00	0.11
Manufacture of dairy products	0.31	0.25	0.25	90:0	0:30	00:00	1.00	1.00	01.0	00.00	60.0	0.01	68.0	0.02	1.00	0.17	1.00	1.00	1.00	0.44
Manufacture of domestic appliances	0.00	0.00	00:00	00.00	00:00	0.00	00.00	00:00	0.00	0.00	0.00	00.0	0.00	0.00	0.00	0.00	00:00	00:00	0.00	0.00
Manufacture of electric lighting equipment	0.22	0.14	0.17	0.09	0.34	00:00	1.00	1.00	0.03	0.00	80.0	0.00	0.94	0.02	1.00	0.28	1.00	00:00	1.00	0.31
Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	92.0	0.34	0.43	0.14	0.60	0.00	1.00	1.00	0.11	1.00	0.28	0.73	0.88	0.02	1.00	0.33	1.00	1.00	1.00	0.43
Manufacture of electronic components and boards	0.39	0.28	0.32	0.08	0.45	0.00	1.00	1.00	0.04	0.09	0.19	0.09	0.88	0.01	1.00	0.13	1.00	1.00	1.00	0.44
Manufacture of footwear	0.23	0.16	0.20	0.03	0.28	0.00	1.00	1.00	0.05	00:00	0.05	0.01	0.88	0.01	1.00	90.0	1.00	1.00	1.00	0.51
Manufacture of furniture	0.29	0.23	0.22	90:0	0.26	0.00	1.00	1.00	0.04	0.04	60.0	0.05	0.88	0.02	1.00	0.05	1.00	1.00	1.00	0.39
Manufacture of games and toys	0.20	0.04	0.21	60:0	0.16	0.00	0.50	1.00	0.00	00.00	0.54	00:00	0.00	0.01	1.00	90.0	0.00	00:0	00:00	0.36
Manufacture of gas; distribution of gaseous fuels through mains	0.29	0.20	0.22	0.08	0.35	00:00	1.00	1.00	90:0	0.01	0.11	0.01	0.86	0.01	1.00	0.40	1.00	1.00	1.00	0.45
Manufacture of general-purpose ma- chinery	0.48	0.31	0.31	0.37	0.49	00:00	1.00	1.00	0.09	0.13	0.16	0.21	0.88	0.02	1.00	0.28	1.00	1.00	1.00	0.42
Manufacture of glass and glass products	0.33	0.29	0.34	0.08	0.38	0.00	1.00	1.00	0.05	0.02	0.15	0.03	06:0	0.02	1.00	0.16	1.00	1.00	1.00	0.42
Manufacture of grain mill products, starches and starch products	0.22	0.02	0.10	0.03	0.09	00:00	1.00	1.00	0.02	00:00	0.11	00:00	0.91	0.01	1.00	1.21	1.00	1.00	1.00	0.48
Manufacture of jewellery, bijouterie and related articles	0.21	0.18	0.08	0.05	0.19	0.00	1.00	1.00	0.04	00:00	0.05	0.00	0.89	0.02	1.00	0.05	1.00	1.00	1.00	0.46
Manufacture of knitted and crocheted apparel	0.14	0.14	0.06	0.00	0.20	0.00	0.00	1.00	0.03	0.00	0.03	0.00	0.87	0.01	1.00	00:00	0.00	00:00	1.00	0.27
Manufacture of man-made fibres	0.00	00:00	00:00	00:00	0.00	00:00	00:00	0.00	0.00	0.00	00:00	00:0	0.00	0.00	0.00	0.00	0.00	00:0	00:00	0.00
Manufacture of measuring, testing, navigating and control equipment; watches and clocks	0.00	0.00	0.00	0.00	00:00	0.00	0.00	0.00	0.00	0.00	00:00	00:00	00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manufacture of medical and dental instruments and supplies	0.27	0.17	0.13	0.03	0.36	00:00	1.00	1.00	0.11	00:00	90:0	00:00	0.87	0.02	1.00	00:00	1.00	00:00	1.00	0.40
Manufacture of military fighting vehicles	0.00	00:00	00:00	00:00	0.00	0.00	00:00	0.00	00:00	0.00	0.00	00:00	0.00	0.00	0.00	0.00	0.00	00:00	0.00	0.00
Manufacture of motor vehicles	0.61	0.30	0.39	1.00	0.52	0.00	1.00	1.00	90:0	0.28	0.23	0.36	0.88	0.02	1.00	0.37	1.00	1.00	1.00	0.44
Manufacture of musical instruments	0.17	0.08	0.28	0.17	0.42	0.00	1.00	1.00	0.00	0.00	0.04	00.00	0.95	0.02	1.00	0.00	1.00	1.00	1.00	0.42
Manufacture of non-metallic mineral products n.e.c.	0.39	0.27	0.28	0.08	0.37	00:00	1.00	1.00	0.05	0.09	0.14	0.13	0.88	0.02	1.00	0:30	1.00	1.00	1.00	0.42
Manufacture of optical instruments and photographic equipment	0.33	0.28	0.33	0.07	0.80	00:00	1.00	1.00	90:0	00:00	0.15	00:00	0.88	0.03	1.00	0.11	1.00	1.00	1.00	0.52
Manufacture of other chemical products	0.23	0.13	0.08	0.05	0.31	0.00	1.00	1.00	0.04	0.00	0.07	00:00	0.87	0.03	1.00	0.03	1.00	1.00	1.00	0.40
Manufacture of other electrical equipment	0.17	0.07	0.10	0.03	0.17	0.00	1.00	1.00	0.01	0.00	0.05	00:00	98.0	0.01	1.00	0.00	1.00	1.00	1.00	0.34



	Overall	D111	D112	D113	D114	D115	D116	D117	D211	D212	D2I3	D214	D311	D312	D313	D314	D315	D316	D317	D318
Manufacture of other fabricated metal products; metalworking service activities	0.19	0.11	0.05	0.01	0.17	00:00	1.00	1.00	0.03	00:00	0.04	0.00	0.88	0.02	1.00	0.09	1.00	1.00	1.00	0.42
Manufacture of other food products	0:30	0.16	0.17	0.05	0.22	0.00	1.00	1.00	90:0	0.04	0.08	90:0	0.89	0.02	1.00	0.34	1.00	1.00	1.00	0.40
Manufacture of other textiles	0.12	0.07	0.05	0.02	0.14	0.00	1.00	1.00	0.01	0.00	0.03	00:00	0.00	0.02	1.00	0.10	1.00	1.00	00:00	0.35
Manufacture of paper and paper products	0.38	0.23	0:30	0.08	0.39	0.00	1.00	1.00	90:0	0.08	0.15	0.12	0.88	0.02	1.00	0.26	1.00	1.00	1.00	0.43
Manufacture of parts and accessories for motor vehicles	0.25	0.18	60:0	0.04	0.33	00:00	1.00	1.00	0.03	00:00	0.12	0.00	0.91	0.03	1.00	00:00	1.00	1.00	1.00	0.48
Manufacture of pharmaceuticals, medicinal chemical and botanical products	0.29	0.20	0.19	0.14	0.36	00:00	1.00	1.00	0.04	00:00	0.13	0.00	0.88	0.04	1.00	0.98	1.00	1.00	1.00	0.40
Manufacture of plastics products	0.46	0.24	0.29	0.09	0.38	0.00	1.00	1.00	90.0	0.20	0.14	0.26	0.88	0.02	1.00	0.27	1.00	1.00	1.00	0.43
Manufacture of prepared animal feed	0.21	0.12	0.16	0.04	0.20	0.00	1.00	1.00	0.03	0.00	90:0	00:00	0.88	0.01	1.00	0.21	1.00	1.00	1.00	0.42
Manufacture of products of wood, cork, straw and plaiting materials	0.06	0.02	0.01	0.00	90:0	0.00	0.00	1.00	0.01	0.00	0.01	0.00	0.00	0.02	1.00	0.00	1.00	0.00	1.00	0.27
Manufacture of railway locomotives and rolling stock	0.00	00:00	00:00	0.00	0.00	0.00	0:00	0.00	00:00	00:00	00:00	0.00	0.00	00:00	00:00	00:00	0.00	0.00	00:00	00:00
Manufacture of refined petroleum products	0.54	0.57	0.48	0.23	89.0	0.00	1.00	1.00	0.14	0.07	0.18	0.18	0.89	0.01	1.00	1.39	1.00	1.00	1.00	0.44
Manufacture of rubber products	0:20	0.32	0.39	0.10	0.48	0.00	1.00	1.00	0.08	0.21	0.22	0.20	0.88	0.02	1.00	0.21	1.00	1.00	1.00	0.44
Manufacture of special-purpose machinery	0.27	0.11	0.08	0.04	0.32	0.00	1.00	1.00	0.10	0.00	0.07	00:00	0.87	0.01	1.00	0.13	1.00	1.00	1.00	0.35
Manufacture of sports goods	0.00	0.00	00:00	0.00	0.00	0.00	00:00	00:00	00.00	0.00	00.0	00.00	0.00	0.00	00:00	0.00	0.00	00:00	0.00	0.00
Manufacture of structural metal products, tanks, reservoirs and steam generators	0.54	0.36	0.38	0.13	0.47	00:00	1.00	1.00	0.10	0.24	0.18	0:30	0.88	0.02	1.00	09:0	1.00	1.00	1.00	0.43
Manufacture of tobacco products	0:30	0.31	0.38	0.13	0.47	0.00	1.00	1.00	0.03	0.00	0.15	00:00	06:0	0.02	1.00	0.03	1.00	1.00	1.00	0.37
Manufacture of transport equipment n.e.c.	0.17	0.10	0.22	0.04	0.23	0.00	1.00	1.00	0.00	0.00	0.05	0.00	0.88	0.01	1.00	0.33	1.00	1.00	1.00	0.49
Manufacture of vegetable and animal oils and fats	0.42	0.41	0.29	0.07	0.51	0.00	1.00	1.00	0.12	0.01	0.20	0.02	0.88	0.02	1.00	1.62	1.00	1.00	1.00	0.49
Manufacture of weapons and ammunition	0.00	0.00	00:00	0.00	0.00	00:00	00:00	00:00	00.00	0.00	00:00	0.00	0.00	0.00	00:00	0.00	0.00	00:00	0.00	0.00
Manufacture of wearing apparel, except fur apparel	0.09	0.02	0.02	00:00	0.04	00:00	0.50	1.00	00:00	00.00	0.01	0.00	0.85	0.03	1.00	0.00	1.00	1.00	1.00	0.45
Manufacture of wiring and wiring devices	0.04	0.02	0.01	0.01	0.00	0.00	00:00	1.00	0.00	0.00	0.01	0.00	0.00	0.01	1.00	0.00	0.00	0.00	1.00	0.18
Market research and public opinion polling	0.27	0.15	90.0	0.05	0.39	0.00	1.00	1.00	60:00	00:00	0.09	0.00	0.91	0.01	1.00	0.01	1.00	1.00	1.00	0.37
Materials recovery	0.24	0.28	0.21	0.04	0.28	0.00	1.00	1.00	0.04	0.00	90.0	00:00	0.88	0.01	1.00	0.02	1.00	1.00	1.00	0.32
Medical and dental practice activities	0.14	0.03	0.03	0.01	0.10	0.00	1.00	1.00	0.01	0.00	0.02	0.01	0.89	0.01	1.00	0.04	1.00	1.00	1.00	0.36
Mining and quarrying n.e.c.	0.23	0.18	0.13	0.03	0.22	0.00	1.00	1.00	0.03	0.00	0.09	0.00	0.91	0.02	1.00	0.77	1.00	0.00	1.00	0.42
Mining of hard coal	0:30	0.33	0.23	90:0	0.28	0.00	1.00	1.00	0.07	0.00	0.11	0.01	0.89	0.01	1.00	0.15	1.00	1.00	1.00	0.53
Mining of iron ores	0.24	0.24	0.23	0.05	0.29	00:00	1.00	1.00	0.03	0.00	0.08	0.00	0.89	0.01	1.00	0.03	1.00	1.00	1.00	0.44



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	Index	D111	D112	D113	D114	D115	D116	D117	D2I1	D212 1	D213 E	D214	D311	D312 I	D3I3	D314 I	D315 E	D316 D317	_	D3I8
Mining of lignite	0.00	00:00	00:00	00:00	00:00	00:00	0.00	0.00	0.00	00.0	00:0	00:0	00.00	00.00	00:00	00:0	0.00	00:0 0:00		00.0
Mining of non-ferrous metal ores	0.10	0.02	0.02	00:00	0.17	00:00	00:00	1.00	0.01	00.00	0.03	00:00	0.83	0.01	1.00	00:00	1.00	0.00 00.00	_	0.55
Mixed farming	0.18	0.05	0.03	0.01	60.0	00:00	1.00	1.00	0.02	0.01	0.04	00:00	06.0	0.01	1.00	0.02	1.00	1.00 1.00	-	0.40
Monetary intermediation	0.64	0.48	0.17	0.13	0.98	00:00	1.00	1.00	0.07	0.43	0.71 0	0.17	0.88	0.02	1.00	0.19	1.00	1.00	00:1	0.40
Motion picture, video and television programme activities	0.27	0.17	0.15	0.05	0.28	0.00	1.00	1.00	0.05	0.02	0.07	0.02	0.88	0.01	1.00	0.22	1.00	1.00		0.44
Non-specialised wholesale trade	0.15	0.05	0.02	0.01	60.0	00.00	1.00	1.00	0.01	0.01	0.02	0.01	0.87	0.02	1.00	0.01	1.00	1.00 1.00	\vdash	0.41
Office administrative and support activities	0.24	0.14	0.10	0.05	0.39	0.00	1.00	1.00	0.02	0.01	0.08	0.02	0.88	0.02	1.00	0.14	1.00	1.00	00:1	0.46
Organisation of conventions and trade shows	0.26	0.16	0.12	0.04	0.26	0.00	1.00	1.00	0.07	0.01	0.07	0.01	0.88	0.01	1.00	0.04	1.00	1.00		0.40
Other accommodation	0.22	0.07	0.02	0.05	0.16	00:00	1.00	1.00	0.10	00.0	0.04	0.00	98.0	0.01	1.00	00:0	1.00 0	0.00 0.00		0.42
Other amusement and recreation activities	0.21	60:0	0.04	0.01	0.22	00:00	1.00	1.00	0.04	00.0	0.05 C	00:0	0.88	0.01	1.00	0.02	1.00	1.00	1.00	0.47
Other education	0.34	0.21	0.22	0.07	0.33	0.04	1.00	1.00	90:0	90.0	0.10	90:0	0.89	0.02	1.00	0.34	1.00	1.00	1.00	0.40
Other financial service activities, except insurance and pension funding activities	0.34	0.09	0.07	0.07	0.27	00:00	1.00	1.00	0.03	0.19	0.07	0.10	0.87	0.01	1.00	0.03	1.00	1.00		0.45
Other human health activities	0.28	0.14	0.14	60:0	0.33	00:00	1.00	1.00	0.04	0.02	0.09 c	0.03	0.89	0.02	1.00	. 69:0	1.00	1.00 1.00		0.31
Other human resources provision	0.16	0.08	0.04	0.03	0.18	00:00	1.00	1.00	0.01	0.01	0.03 C	00:00	0.90	0.02	1.00	90:0	1.00	1.00 1.00	-	0.43
Other information service activities	0.32	0.20	0.11	0.04	0.34	00:00	1.00	1.00	0.07	0.09	0.07 C	0.02	0.87	0.02	1.00	0.29	1.00	1.00	00.1	0.44
Other land transport	0.19	0.07	90.0	0.02	0.09	00:00	1.00	1.00	0.02	0.01	0.03 C	0.02	0.89	0.02	1.00	0.10	1.00	1.00	00:1	0.41
Other manufacturing n.e.c.	0.17	0.08	90.0	0.02	0.13	00:00	1.00	1.00	0.02	00.0	0.03 C	0.01	0.88	0.02	1.00	. 90:0	1.00	1.00 1.00		0.42
Other personal service activities	0.22	0.05	0.04	0.02	0.14	00:00	1.00	1.00	0.02	0.05	0.03 c	0.04	0.89	0.02	1.00	. 90.0	1.00	1.00 1.00	\dashv	0.40
Other professional, scientific and technical activities n.e.c.	0.25	0.12	90:0	0.03	0.31	0.00	1.00	1.00	0.08	0.01	0.05	0.01	0.87	0.02	1.00	0.04	1.00	1.00 1.00		0.44
Other reservation service and related activities	0.12	0.05	0.03	0.03	0.22	00:00	1.00	1.00	0.01	0.00	0.04	00:00	0.00	00:00	1.00	00.00	1.00 0	0.00 0.00		0.64
Other residential care activities	0.00	00:00	00:00	00:00	0.00	00:00	0.00	00:00	0.00	00.0	00:0	0.00	00:00	00:0	00:0	00:0	0.00	0.00 0.00		0.00
Other social work activities without accommodation n.e.c.	0.18	0.10	0.13	0.03	0.21	0.00	1.00	1.00	0.02	00:00	0.05	00:00	0.90	0.03	1.00	00:00	1.00	1.00		0.37
Other specialised construction activitie	0.21	0.07	0.04	0.02	0.18	00:00	1.00	1.00	0.03	0.01	0.04 C	0.03	0.89	0.02	1.00	0.16	1.00	1.00 1.00	_	0.44
Other specialised wholesale	0.22	0.07	0.03	0.01	0.14	00:00	1.00	1.00	0.02	0.04	0.03 C	0.05	0.88	0.02	1.00	. 80:0	1.00	1.00	1.00	0.42
Other telecommunications activities	0.22	0.15	0.11	0.03	0.27	00:00	1.00	1.00	0.03	00.00	0.06 C	0.01	0.88	0.02	1.00	0.27	1.00	1.00 1.00	_	0.40
Passenger air transport	0.44	0.42	0.31	0.10	0.49	00:00	1.00	1.00	0.05	0.07	0.22 C	0.07	0.90	0.02	1.00	1.43	1.00	1.00	00.1	0.46
Pension funding	0.15	0.58	00:00	0.04	0.00	00:00	0.00	1.00	0.09	00.0	0.00	00:00	00.00	0.01	1.00	00.0	0.00	0.00 0.00	-	0.55
Photographic activities	0.08	0.02	00:00	0.01	0.12	00.00	0.50	1.00	0.01	0.00	0.02	0.00	0.00	0.02	1.00	0.00	1.00	0.00 00.00	\dashv	0.55
Plant propagation	0.17	0.05	0.04	0.01	0.10	00:00	1.00	1.00	0.02	0.01	0.02	0.01	0.87	0.01	1.00	0.00	1.00	1.00	\dashv	0.47



Participation Participatio		Overall	D111	D112	D113	D114	D115	D116	D117	D211	D2I2	D2I3	D214	D311	D312	D313	D314	D315	D316	D317	D318
4.024 6.03 6.04 6.03 <t< th=""><th>Postal activities</th><th>0.41</th><th>0.17</th><th>0.18</th><th>0.05</th><th>0.29</th><th>0.00</th><th>1.00</th><th>1.00</th><th>0.03</th><th>0.14</th><th>-</th><th>0.05</th><th>0.90</th><th>0.02</th><th>1.00</th><th>0.02</th><th>1.00</th><th></th><th>1.00</th><th>0.35</th></t<>	Postal activities	0.41	0.17	0.18	0.05	0.29	0.00	1.00	1.00	0.03	0.14	-	0.05	0.90	0.02	1.00	0.02	1.00		1.00	0.35
1	Pre-primary and primary education	0.24	0.08	0.11	0.03	0.16	0.03	1.00	1.00	0.03	0.03	Н	0.03	0.89	0.02	1.00	0.23	1.00	1.00	1.00	0.40
6.24 6.25 6.1 </th <th>Printing and service activities related to printing</th> <th>0.35</th> <th>0.19</th> <th>0.21</th> <th>0.05</th> <th>0.25</th> <th>00.00</th> <th>1.00</th> <th>1.00</th> <th>0.08</th> <th>60:0</th> <th>0.10</th> <th>0.07</th> <th>0.89</th> <th>0.02</th> <th>1.00</th> <th>0.13</th> <th>1.00</th> <th>1.00</th> <th>1.00</th> <th>0.43</th>	Printing and service activities related to printing	0.35	0.19	0.21	0.05	0.25	00.00	1.00	1.00	0.08	60:0	0.10	0.07	0.89	0.02	1.00	0.13	1.00	1.00	1.00	0.43
 6.23 6.24 6.25 <l< th=""><th>Private security activities</th><th>0.47</th><th>0.26</th><th>0.22</th><th>0.11</th><th>0.17</th><th>0.00</th><th>1.00</th><th>1.00</th><th>90:0</th><th>0.08</th><th>0.23</th><th>0.21</th><th>0.88</th><th>0.02</th><th>1.00</th><th>2.79</th><th>1.00</th><th>1.00</th><th>1.00</th><th>0.47</th></l<>	Private security activities	0.47	0.26	0.22	0.11	0.17	0.00	1.00	1.00	90:0	0.08	0.23	0.21	0.88	0.02	1.00	2.79	1.00	1.00	1.00	0.47
1	Processing and preserving of fish, crustaceans and molluscs	0.28	0.13	0.15	0.03	0.10	00:00	1.00	1.00	0.02	00:00		00:00	0.88	0.01	1.00	2.36	1.00	1.00	1.00	0.44
4.0.2 0.12 <t< th=""><th>Processing and preserving of fruit and vegetables</th><th>0.29</th><th>0.25</th><th>0.23</th><th>90:0</th><th>0.43</th><th>00:00</th><th>1.00</th><th>1.00</th><th>0.07</th><th>00:00</th><th>60:0</th><th>00:00</th><th>0.88</th><th>0.02</th><th>1.00</th><th>0.37</th><th>1.00</th><th>1.00</th><th>1.00</th><th>0.37</th></t<>	Processing and preserving of fruit and vegetables	0.29	0.25	0.23	90:0	0.43	00:00	1.00	1.00	0.07	00:00	60:0	00:00	0.88	0.02	1.00	0.37	1.00	1.00	1.00	0.37
10.20 0.14 0.04 0.05 0.04 0.05 0.00 1.00 1.00 0.07 0.01 0.09 0.08 0.08 0.01 1.00 0.05 1.00	Processing and preserving of meat	0.63	0.34	0.45	0.14	0.47	0.00	1.00	1.00	60:0	0.36	H	0.53	0.89	0.02	1.00	0.85	1.00	$\vdash\vdash$	1.00	0.42
0.32 0.14 <th< th=""><th>Publishing of books, periodicals and other publishing activities</th><th>0.14</th><th>0.04</th><th>0.03</th><th>0.01</th><th>0.17</th><th>00.00</th><th>1.00</th><th>1.00</th><th>0.01</th><th>00:00</th><th>0.03</th><th>00:00</th><th>0.84</th><th>0.01</th><th>1.00</th><th>00:00</th><th>1.00</th><th>0.00</th><th>1.00</th><th>0.28</th></th<>	Publishing of books, periodicals and other publishing activities	0.14	0.04	0.03	0.01	0.17	00.00	1.00	1.00	0.01	00:00	0.03	00:00	0.84	0.01	1.00	00:00	1.00	0.00	1.00	0.28
0.25 0.14 0.26 0.24 0.26 1.00 1.00 0.04 0.04 0.05 1.00 1.00 0.04 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.05 0.04 0.05 0.04 0.05 <th< th=""><th>Quarrying of stone, sand and clay</th><th>0:30</th><th>0.27</th><th>0.16</th><th>0.04</th><th>0:30</th><th>0.00</th><th>1.00</th><th>1.00</th><th>0.07</th><th>0.01</th><th>Н</th><th>0.03</th><th>0.88</th><th>0.01</th><th>1.00</th><th>0.43</th><th>1.00</th><th>Н</th><th>1.00</th><th>0.44</th></th<>	Quarrying of stone, sand and clay	0:30	0.27	0.16	0.04	0:30	0.00	1.00	1.00	0.07	0.01	Н	0.03	0.88	0.01	1.00	0.43	1.00	Н	1.00	0.44
10.25 0.10 0.06 0.04 0.28 0.00 1.00 1.00 1.00 0.14 0.01 0.05	Radio broadcasting	0.70	0.74	0.32	90.0	0.64	0.00	1.00	1.00	1.00	0.00	-	00:00	0.89	0.02	1.00	0.35	1.00	1.00	1.00	0.42
10 10 10 10 10 10 10 10	a fee	0.29	0.10	90.0	0.04	0.28	00.00	1.00	1.00	0.14	0.01	0.05	0.01	0.90	0.02	1.00	0.05	1.00	1.00	1.00	0.37
6.25 0.17 0.10 0.08 0.49 0.00 1.00 0.00 <th< th=""><th>Real estate activities with own or leased property</th><th>0.32</th><th>0.14</th><th>60:0</th><th>0.09</th><th>0.42</th><th>00:00</th><th>1.00</th><th>1.00</th><th>0.05</th><th>0.08</th><th>0.09</th><th>0.05</th><th>0.89</th><th>0.02</th><th>1.00</th><th>0.20</th><th>1.00</th><th>1.00</th><th>1.00</th><th>0.43</th></th<>	Real estate activities with own or leased property	0.32	0.14	60:0	0.09	0.42	00:00	1.00	1.00	0.05	0.08	0.09	0.05	0.89	0.02	1.00	0.20	1.00	1.00	1.00	0.43
0.25 0.18 0.11 0.05 0.05 0.09 <th< th=""><th>Reinsurance/Retakaful</th><th>0.26</th><th>0.17</th><th>0.10</th><th>0.08</th><th>0.49</th><th>0.00</th><th>1.00</th><th>1.00</th><th>0.03</th><th>0.00</th><th>Н</th><th>00:00</th><th>0.90</th><th>0.03</th><th>1.00</th><th>0.00</th><th>1.00</th><th>\vdash</th><th>1.00</th><th>0.49</th></th<>	Reinsurance/Retakaful	0.26	0.17	0.10	0.08	0.49	0.00	1.00	1.00	0.03	0.00	Н	00:00	0.90	0.03	1.00	0.00	1.00	\vdash	1.00	0.49
10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	Remediation activities and other waste management services	0.25	0.18	0.17	90.0	0.29	00.00	1.00	1.00	0.04	00:00		00:00	0.89	0.02	1.00	0.84	1.00	1.00	1.00	0.50
Color Colo	Renting and leasing of motor vehicles	0.12	0.11	0.03	0.01	0.08	0.00	0.00	1.00	0.02	0.00	-	00:00	0.87	0.04	1.00	0.00	00:00	-	1.00	0.55
0.02 0.03 0.04 0.05 <th< th=""><th>Renting and leasing of other machinery, equipment and tangible goods</th><th>0.20</th><th>0.07</th><th>0.04</th><th>0.05</th><th>0.13</th><th>0.00</th><th>1.00</th><th>1.00</th><th>0.02</th><th>0.01</th><th>0.05</th><th>0.02</th><th>0.88</th><th>0.02</th><th>1.00</th><th>0.36</th><th>1.00</th><th>1.00</th><th>1.00</th><th>0.44</th></th<>	Renting and leasing of other machinery, equipment and tangible goods	0.20	0.07	0.04	0.05	0.13	0.00	1.00	1.00	0.02	0.01	0.05	0.02	0.88	0.02	1.00	0.36	1.00	1.00	1.00	0.44
0.05 0.04 0.05 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.01 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 <th< th=""><th>Renting and leasing of personal and household goods</th><th>0.12</th><th>0.05</th><th>0.03</th><th>0.01</th><th>0.13</th><th>00:00</th><th>0.50</th><th>1.00</th><th>0.02</th><th>00:00</th><th>0.05</th><th>00:00</th><th>0.00</th><th>0.01</th><th>1.00</th><th>0.00</th><th>1.00</th><th>1.00</th><th>1.00</th><th>0.42</th></th<>	Renting and leasing of personal and household goods	0.12	0.05	0.03	0.01	0.13	00:00	0.50	1.00	0.02	00:00	0.05	00:00	0.00	0.01	1.00	0.00	1.00	1.00	1.00	0.42
c.15 0.09 0.03 0.00 0.09 0.00 <t< th=""><th>Repair of computers and communication equipment</th><th>0.08</th><th>0.04</th><th>0.02</th><th>0.01</th><th>0.08</th><th>00:00</th><th>0.50</th><th>1.00</th><th>0.01</th><th>00:00</th><th>0.01</th><th>0.00</th><th>0.00</th><th>0.03</th><th>1.00</th><th>00:00</th><th>1.00</th><th>-</th><th>00.0</th><th>0.33</th></t<>	Repair of computers and communication equipment	0.08	0.04	0.02	0.01	0.08	00:00	0.50	1.00	0.01	00:00	0.01	0.00	0.00	0.03	1.00	00:00	1.00	-	00.0	0.33
t 0.10 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.04 0.03 0.	Repair of fabricated metal products, machinery and equipment	0.15	0.09	0.03	00.00	0.09	00.00	1.00	1.00	0.03	00:00	0.02	0.00	0.87	0.01	1.00	0.02	1.00		1.00	0.43
4 0.38 0.34 0.29 0.11 0.61 0.00 1.00 1.00 0.03 0.01 0.00 1.00 1.00 0.13 0.05 0.08 0.02 1.00 0.00 0.10 0.00 0.	Repair of personal and household goods	0.10	0.02	0.02	0.01	0.10	0.00	0.50	1.00	0.01	0.00	\vdash	00:00	0.92	0.02	1.00	0.00	1.00	\dashv	1.00	0.55
4 0.24 0.27 0.07 0.03 0.69 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Research and experimental development on natural sciences and engineering	0.38	0.34	0.29	0.11	0.61	00.00	1.00	1.00	60:0	0.04		0.05	0.88	0.02	1.00	0.29	1.00	1.00	1.00	0.44
0.00 0.00 <th< th=""><th>Research and experimental development on social sciences and humanities</th><th>0.24</th><th>0.27</th><th>0.07</th><th>0.03</th><th>69:0</th><th>00.00</th><th>00:00</th><th>1.00</th><th>90:0</th><th>00:00</th><th>0.10</th><th>0.00</th><th>0.89</th><th>0.02</th><th>1.00</th><th>00.00</th><th>1.00</th><th></th><th>00.0</th><th>0.59</th></th<>	Research and experimental development on social sciences and humanities	0.24	0.27	0.07	0.03	69:0	00.00	00:00	1.00	90:0	00:00	0.10	0.00	0.89	0.02	1.00	00.00	1.00		00.0	0.59
0.09 0.03 0.01 0.01 0.16 0.00 0.50 1.00 0.01 0.03 0.00 0.03 0.03 0.00 0.00 1.00 0.00 0.00 0.00	Residential care activities for mental retardation, mental health and substance abuse	0.00	0.00	0.00	0.00	0.00	00:00	0.00	0.00	0.00	0.00	0.00	00:00	00.00	0.00	0.00	00:00	0.00		00.0	0.00
	Residential care activities for the elderly and disabled	0.09	0.03	0.01	0.01	0.16	00.00	0.50	1.00	0.01	00.00	0.03	00:00	00:00	0.01	1.00	00:00	1.00		00.0	0.00



	Overall	D111	D112	D113	D114	D115	D116	D117	D2I1	D212	D2I3	D214	D311	D312	D3I3	D314	D315	D316 [D317	D318
Residential nursing care facilities	0.15	0.04	90:0	0.04	0.16	00:00	1.00	1.00	0.01	00.00	0.04	0.00	98.0	0.01	1.00	0.07	1.00	1.00	1.00	0.35
Restaurants and mobile food service activities	0.35	0.11	0.10	0.04	0.15	00:00	1.00	1.00	0.03	0.16	0.05	0.20	0.89	0.02	1.00	0.20	1.00	1.00	1.00	0.39
Retail sale in non-specialised stores	0.44	0.18	0.12	0.02	0.19	0.25	1.00	1.00	0.05	0.17	90.0	0.52	0.89	0.01	1.00	0.02	1.00	1.00	1.00	0.39
Retail sale of automotive fuel in special- ised stores	0.11	0.01	0.01	00:00	0.02	00:00	1.00	1.00	0.01	00:00	0.01	00:00	0.89	0.01	1.00	0.03	1.00	1.00	1.00	0.41
Retail sale of cultural and recreation goods in specialised stores	0.14	0.02	0.02	0.01	90:0	00:00	1.00	1.00	0.01	0.01	0.02	0.01	0.90	0.01	1.00	0.00	1.00	1.00	1.00	0.37
Retail sale of food, beverages and tobac- co in specialised stores	0.15	0.05	0.03	0.01	60:0	00:00	1.00	1.00	0.01	0.01	0.03	0.01	0.88	0.02	1.00	0.08	1.00	1.00	1.00	0.40
Retail sale of information and communications equipment in specialised stores	0.15	0.05	0.02	0.01	60:0	00:00	1.00	1.00	0.01	0.01	0.02	0.01	0.87	0.02	1.00	0.01	1.00	1.00	1.00	0.38
Retail sale of other goods in specialised stores	0.25	0.07	0.04	0.02	0.16	00:00	1.00	1.00	0.03	90:0	0.04	0.07	0.88	0.02	1.00	0.02	1.00	1.00	1.00	0.42
Retail sale of other household equipment in specialised stores	0.17	0.04	0.02	0.00	0.07	0.00	1.00	1.00	0.01	0.03	0.02	0.01	0.87	0.02	1.00	0.00	1.00	1.00	1.00	0.35
Retail sale via stalls and markets	0.20	0.07	0.05	0.01	0.15	00:00	1.00	1.00	0.02	0.01	0.08	00:00	0.90	0.02	1.00	00:0	1.00	1.00	1.00	0.39
Retail trade not in stores, stalls or markets	0.26	0.15	0.11	0.04	0:30	00.00	1.00	1.00	0.04	0.03	90.0	0.03	0.88	0.02	1.00	90:0	1.00	1.00	1.00	0.45
Sale of motor vehicle parts and accessories	0.19	0.11	60.0	0.02	0.12	00.00	1.00	1.00	0.02	0.01	0.03	0.01	0.89	0.01	1.00	0.01	1.00	1.00	1.00	0.34
Sale of motor vehicles	0.38	0.24	0.18	0.05	0.27	0.40	1.00	1.00	0.12	0.08	0.08	80:0	06:0	0.02	1.00	0.10	1.00	1.00	1.00	0.42
Sale, maintenance and repair of motorcy- cles and related parts and accessories	0.22	0.18	0.13	0.03	0.18	00:00	1.00	1.00	0.04	0.00	0.05	0.01	0.88	0.05	1.00	0.04	1.00	1.00	1.00	0.38
Satellite telecommunications activities	0.26	0.14	0.09	0.03	0.41	00:00	1.00	1.00	90:0	00.00	60:0	00:00	0.94	0.01	1.00	0.23	1.00	1.00	1.00	0.50
Sawmilling and planing of wood	0.32	0.24	0.20	0.05	0.25	00:00	1.00	1.00	0.07	0.03	60:0	90:0	0.88	0.01	1.00	0.08	1.00	1.00	1.00	0.43
Sea and coastal water transport	0.35	0.31	0.24	0.09	0.39	00:00	1.00	1.00	0.08	0.03	0.11	0.04	0.88	0.02	1.00	0.56	1.00	1.00	1.00	0.44
Secondary education	0.28	0.14	0.03	0.05	0.34	0.00	1.00	1.00	0.09	0.01	60:0	0.01	0.89	0.01	1.00	0.37	1.00	1.00	1.00	0.32
Security systems service activities	0.11	0.07	0.01	0.01	90.0	00:00	0.50	1.00	0.01	0.00	0.01	0.00	0.88	0.01	1.00	00.00	1.00	1.00	1.00	0.55
Sewerage	0.21	0.18	90.0	0.02	0.16	00:00	1.00	1.00	0.02	0.01	0.03	0.05	0.89	0.02	1.00	0.04	1.00	1.00	1.00	0.36
Short term accommodation activities	0.45	0.17	0.23	0.10	0.28	00:00	1.00	1.00	0.13	0.17	0.13	0.24	98.0	0.02	1.00	0.58	1.00	1.00	1.00	0.41
Silviculture and other forestry activities	0.24	0.07	0.04	0.02	0.22	00:00	1.00	1.00	0.04	0.00	0.11	0.00	0.90	0.01	1.00	1.30	1.00	1.00	1.00	0.47
Social work activities without accommodation for the elderly and disabled	0.35	1.00	0.03	0.01	0.52	00:00	0.00	1.00	0.09	0.00	0.18	00:00	0.93	0.08	1.00	0.67	00:00	00:00	1.00	0.59
Software publishing	0.19	0.13	0.04	0.01	0.24	0.00	1.00	1.00	0.04	00.00	0.04	00:00	0.89	0.02	1.00	0.04	1.00	1.00	1.00	0.40
Sound recording and music publishing activities	0.43	0.27	0.15	0.04	0.28	0.00	0.50	1.00	0.57	0.00	0.05	00.00	0.90	0.01	1.00	00:00	1.00	00.00	1.00	0.50
Specialised design activities	0.13	0.04	0.02	0.01	0.11	00:00	1.00	1.00	0.01	0.00	0.02	0.00	0.92	0.02	1.00	0.16	1.00	1.00	1.00	0.38
Spinning, weaving and finishing of textiles	0.34	0.25	0.24	90.0	0:30	00:00	1.00	1.00	0.09	0.03	0.13	0.03	0.88	0.02	1.00	0.33	1.00	1.00	1.00	0.44



	Overall	D111	D112	D113	D114	D115	D116	D117	D2I1	D2I2	D2I3	D214	D311	D312	D3I3	D314	D315	D316	D317	D318
Sports activities	0.20	90.0	0.05	0.02	0.15	00:00	1.00	1.00	0.04	0.01	0.04	0.01	0.89	0.02	1.00	0.00	1.00	1.00	1.00	0.46
Steam and air conditioning supply	0.23	0.16	0.14	0.03	0.29	00:00	1.00	1.00	0.03	0.01	0.07	0.01	0.89	0.02	1.00	0.15	1.00	1.00	1.00	0.33
Support activities for other mining and quarrying	0.21	0.14	0.09	0.03	0.29	0.00	1.00	1.00	0.04	00:00	0.05	0.00	0.89	0.01	1.00	0.14	1.00	1.00	1.00	0.45
Support activities for petroleum and natural gas extraction	0.29	0.43	0.12	0.07	09:0	0.00	1.00	1.00	0.05	0.01	0.10	0.01	0.89	0.01	1.00	0.13	1.00	1.00	1.00	0.48
Support activities for transportation	0.45	0.22	0.21	90:0	0.33	00:00	1.00	1.00	0.10	0.20	0.11	0.26	0.88	0.02	1.00	0.35	1.00	1.00	1.00	0.45
Support activities for agriculture and post-harvest crop activities	0.23	0.07	0.04	0.01	0.15	0.00	1.00	1.00	90:0	0.02	0.05	0.01	0.89	0.01	1.00	0.15	1.00	1.00	1.00	0.44
Support services for forestry	0.13	0.12	0.03	0.01	0.11	00:00	0:50	1.00	0.01	0.00	0.02	00:00	0.88	0.01	1.00	0.04	1.00	1.00	1.00	0.32
Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	0.32	0.19	0.35	0.08	0.40	0.00	1.00	1.00	90:0	0.01	0.16	0.01	0.90	0.05	1.00	0.04	1.00	1.00	1.00	0.37
Technical testing and analysis	0.24	0.12	0.07	0.02	0.35	00:00	1.00	1.00	90:0	0.00	0.07	0.00	0.87	0.02	1.00	0.22	1.00	1.00	1.00	0.43
Television programming and broadcasting activities	0.50	0.29	0.28	0.10	0.65	0.00	1.00	1.00	0.45	0.02	0.13	0.01	06.0	0.01	1.00	0.03	1.00	1.00	1.00	0.37
Temporary employment agency activities	0.18	0.04	0.03	0.05	0.12	00:00	1.00	1.00	0.03	0.00	0.03	0.00	0.89	0.01	1.00	0.01	1.00	1.00	1.00	0.51
Transport via pipeline	0.00	00:00	0.00	00:00	0.00	00:00	0.00	00:00	00:00	0.00	0.00	0.00	00:00	00:00	00:00	00:00	0.00	00:00	0.00	0.00
Transport via railways	0.41	0.21	0.21	0.09	0.24	00:00	1.00	1.00	0.05	0.17	0.08	0.26	0.89	0.02	1.00	0.17	1.00	1.00	1.00	0.44
Travel agency and tour operator activities	0.24	0.15	0.12	0.04	0.15	00:00	1.00	1.00	0.08	0.01	0.03	0.01	0.87	0.01	1.00	0.07	1.00	1.00	1.00	0.47
Trusts, funds and similar financial entities	0.27	0.15	90:0	0.07	0.68	00:00	1.00	1.00	0.05	0.00	0.11	0.00	0.87	0.01	1.00	0.01	1.00	1.00	1.00	0.46
Veterinary activities	0.20	0.10	0.08	0.03	0.23	00:00	1.00	1.00	0.03	0.00	0.05	0.00	0.89	0.01	1.00	0.07	1.00	1.00	1.00	0.41
Warehousing and storage	0.27	0.15	0.14	0.07	0.27	00:00	1.00	1.00	0.03	0.01	0.10	0.03	0.88	0.02	1.00	99.0	1.00	1.00	1.00	0.43
Waste collection	0.20	0.05	0.05	0.02	90:0	00:00	1.00	1.00	0.02	0.00	60.0	0.00	0.91	0.03	1.00	0.73	1.00	1.00	1.00	0.54
Waste treatment and disposal	0.27	0.18	0.19	90:0	0.35	00:00	1.00	1.00	0.05	0.00	0.10	0.00	0.88	0.01	1.00	0.10	1.00	1.00	1.00	0.46
Water collection, treatment and supply	0.54	0.38	0.35	0.23	0.61	1.00	1.00	1.00	0.11	0.16	0.16	0.15	0.89	0.02	1.00	0.71	1.00	1.00	1.00	0.47
Wholesale of agricultural raw materials and live animals	0.13	0.04	0.02	0.01	0.07	0.00	1.00	1.00	0.01	00:00	0.02	0.00	0.88	0.02	1.00	0.05	1.00	1.00	1.00	0.36
Wholesale of food, beverages and tobacco	0.19	0.06	0.03	0.01	0.12	0.00	1.00	1.00	0.01	0.02	0.03	0.03	0.87	0.02	1.00	0.08	1.00	1.00	1.00	0.39
Wholesale of household goods	0.24	0.07	0.03	0.01	0.15	00:00	1.00	1.00	0.02	0.07	0.03	90.0	0.88	0.02	1.00	0.02	1.00	1.00	1.00	0.40
Wholesale of machinery, equipment and supplies	0.22	0.08	0.03	0.01	0.16	0.00	1.00	1.00	0.04	0.02	0.03	0.03	0.88	0.02	1.00	0.05	1.00	1.00	1.00	0.43
Wholesale on a fee or contract basis	0.09	0.10	0.00	00:00	0.23	00:00	0.00	1.00	0.03	0.00	0.04	0.00	00:00	0.01	1.00	00:00	0.00	00:00	0.00	0.00
Wired telecommunications activities	0.54	0.37	0:30	0.14	09:0	00:00	1.00	1.00	0.10	0.31	0.19	0.15	0.87	0.01	1.00	0.56	1.00	1.00	1.00	0.48
Wireless telecommunications activities	0.32	0.23	0.24	0.08	09.0	0.00	1.00	1.00	0.04	00.00	0.16	00:00	0.88	0.01	1.00	0.98	1.00	1.00	1.00	0.44



Reference:

Firm Preparedness and Training Commitment

- D111: Amount of financial assistance allocated for training per worker
- **D112:** Utilisation rate of HRD Corp levy
- **D113:** Number of employees trained **D114:** Number of skilled workers trained
- **D115:** Enrolment in Recognition of Prior Learning (RPL)
- **D116:** Availability of training facilities at own premise
- **D117:** Availability of designated training unit

Worker Skills Development

- **D2I1:** Number of training days attended
- **D2I2:** Enrolment in technical courses
- **D213:** Number of skilled workers who attended certification courses
- **D2I4:** Enrolment in practical/hands-on training

Training Provider Effectiveness

- D311: Enrolment in competent training provider
- D312: Enrolment with certified trainer
- **D3I3:** Enrolment in courses with regular content evaluation
- **D314:** Enrolment in training provider for certification course
- D315: Enrolment in digital training
- **D316:** Enrolment in regular/repetitive training courses
- **D317:** Enrolment in training provider with complete training facilities **D318:** Enrolment with established training provider





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