

CHECK TO SEE WHAT JOBS ARE IN YOUR FUTURE

MALAYSIA'S CRITICAL OCCUPATIONS LIST



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M KULA SAYS

DID YOU KNOW...



"...that **11% - 54%** of jobs in Malaysia could be significantly affected by artificial intelligence (AI) in the next 2 decades?"



"...that **7.4%** of Malaysian workers are at risk of being displaced by 2028¹?"



"...that **50%** of jobs in Malaysia are at high risk of automation²?"



"...that some occupations – including those in **Accounting, Legal and Data Entry** – have the highest probability of automation?"



¹ Oxford Economics & Cisco, September 2018. Technology and the future of ASEAN jobs: The impact of AI on workers in ASEAN's six largest economies: <https://bit.ly/2lPIs5W>

² The Automatability of Occupations in Malaysia: Automatability Profiles of Occupations on the 2017/2018 Critical Occupations List

How do you ensure you have the necessary **skills that are in demand** by Malaysia's main industries?

"TVET will be the 'game changer' in the Government's effort to produce highly talented local talent." – Prime Minister of Malaysia, YAB Tun Dr. Mahathir bin Mohamad speaking at the TVET Conference 2019 "Human Capital Development to Enhance Future Skills Agenda", 9 July 2019.

"New Collar" initiative by the Ministry of Human Resources (MOHR) to empower more Malaysians to pursue TVET.

"A new-collar worker...develops the technical and soft skills needed to work in technology jobs through non-traditional education paths [and are] trained through **community colleges, vocational schools, software boot camps, technical certification programmes, high school technical education and on-the-job apprentices and internships."**
– Forbes, 24 January 2019³.

225,000 Government's target of TVET students' annual intake by 2020⁴.

Technical and Vocational Education and Training Empowerment Cabinet Committee (JKKPTVET) established in August 2019 to strengthen coordination and cooperation between ministries and stakeholders for TVET⁵.

³ Forbes, January 2019. New-Collar Workers: Who Are They And How Are They Contributing To Our Labour Shortage?: <https://bit.ly/2qz9FEM>

⁴ Mid-term review of 11th Malaysia Plan 2016-2020

⁵ Jabatan Pembangunan Kemahiran (JPK), TVET to have coordinating body, October 8, 2019: <https://bit.ly/2VYwFbT>

Ensuring Malaysia's continued prosperity calls for a new approach towards **leveraging all our sources of talent** including our pool of latent talent, and towards **future-proofing our human capital.**

59%

Government target for female labour participation by 2020.

55.2%

Malaysia's female labour participation as of 2018.

26.2%⁶

Malaysia's expected income per capita growth if economic barriers are removed for women in Malaysia.

RM 9,400 (US\$2,250)⁷

Average annual income gain expected from greater women's economic participation in Malaysia.

Career Comeback Programme (CCP) and Work-Life Practices (WLP)

initiatives by the Government to attract and retain Malaysian women at work.

Did you know?



Malaysia has done well in achieving gender parity in education, but this has not translated into improving women's participation rates in the workforce.

⁶Labour Force Survey Report, 2018.

⁷World Bank, Breaking Barriers: Toward Better Economic Opportunities for Women in Malaysia, 2018: <https://bit.ly/2pykVAF>

WHAT IS THE CRITICAL OCCUPATIONS LIST?



Background of the COL

- The Government of Malaysia established the **Critical Skills Monitoring Committee (CSC)** as part of the 11th Malaysia Plan with the mandate **to monitor skills imbalances**.
- The CSC is jointly chaired by **Talent Corporation Malaysia Berhad (TalentCorp)** and the **Institute of Labour Market Information and Analysis (ILMIA)**, both agencies in the Ministry of Human Resources (MOHR).
- One of the CSC's primary objectives is to develop a **Critical Occupations List (COL)** to serve as a platform for the **coordination of human capital development policies** related to higher education and Technical and Vocational Education and Training (TVET), upskilling, scholarship and immigration.
- **The CSC has published an annual COL since 2015**. COL serves as evidence - based occupations that are significantly in demand and facing shortages in the Malaysian labour market.

COL CRITERIA

The COL is a list of occupations in Malaysia that are determined to be skilled, sought-after, and strategic.



SKILLED

Occupations which are skilled based on the Malaysia Standard Classification of Occupations (MASCO) list. Occupations categorised as high-skilled and semi-skilled.



SOUGHT-AFTER

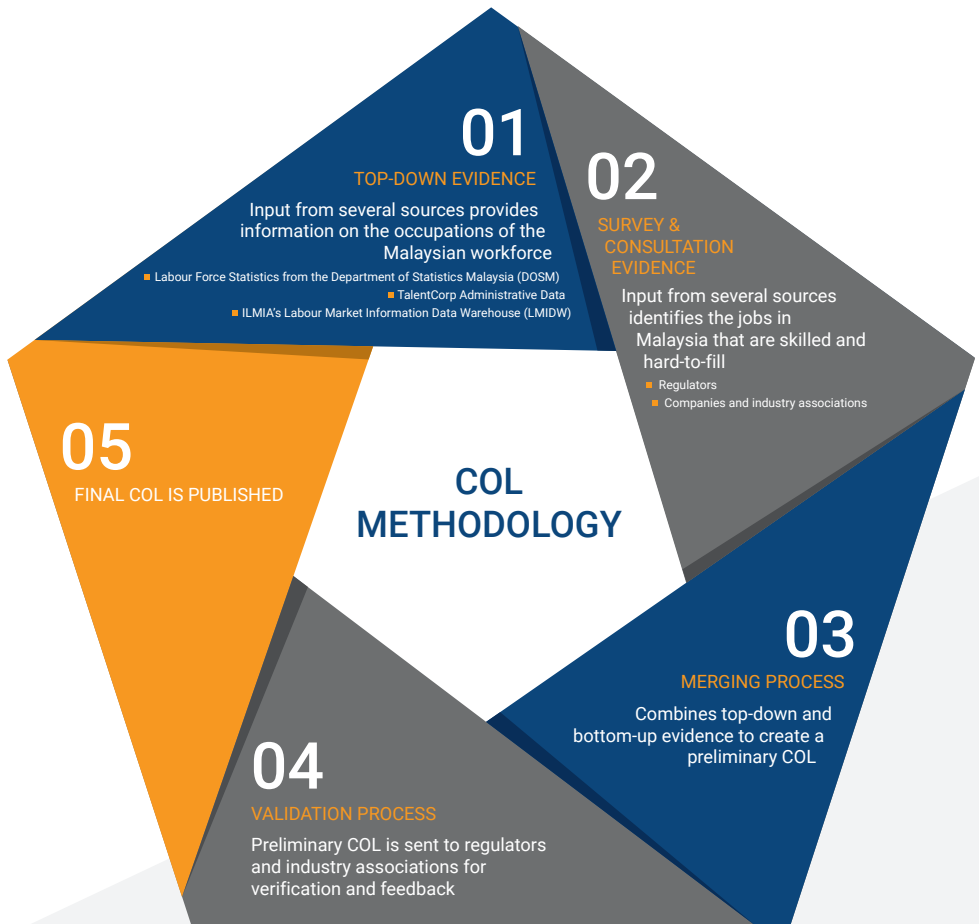
The demand for occupations exceeds the supply of appropriately qualified workers. It is identified using quantitative indicators of shortage and qualitative evidence from employers and other stakeholders.



STRATEGIC

Occupations that are closely linked to Malaysia's economic growth and the development of its knowledge-based economy.

COL METHODOLOGY



Why is the COL important?

- An official channel to identify the skills and jobs most in demand, specific areas of talent needs and issues.
- A platform to identify occupations that are rising in demand according to industry trends or the impact of disruptive innovative technologies.
- Encourage employers to invest further in developing sought-after skills.
- Enhance coordination of human capital development policies interventions.

10 OCCUPATIONS

THAT ARE SOUGHT AFTER IN MALAYSIA IN 2018/2019



ELECTRICAL ENGINEERING TECHNICIAN

- This occupation has appeared in the Critical Occupations List (COL) for 3 consecutive years, from 2016 to 2018.
- PLC Programming, Software Defined Networking and Electric Power Systems are some of the fastest growing skills among this talent for this occupation.



CERTIFIED ACCOUNTANT

- This occupation is in high demand by employers and has appeared on all four editions of the COL since 2015.
- The rapid development of digital technology and changes in accounting standards has led to an evolution in the roles and functions of accounting professionals.
- Increasingly, accountants will be required to be competent in both accounting and information technology in order to fill 'hybrid' roles.



GRAPHIC DESIGNER

- By 2022, large proportions of companies seeking to build and market their businesses are likely to expand their adoption of technologies including app- and web- enabled markets¹.
- This is expected to have a positive impact and create greater demand for professionals in the design field, particularly graphic design.
- Students pursuing graphic design as a career can expect to move into a wide range of roles including exhibition designer, multimedia specialist, marketing, illustrator and production designer for theatre, television or film.



DATA ANALYST AND SCIENTIST²

- There is expected to be increased employer demand for this occupation within the next few years, as many companies look to expand their adoption of user and entity big data analytics by 2022³.

¹ The Future of Jobs Report 2018, World Economic Forum: <https://bit.ly/33M3yLV>

² Data Analyst and Scientist are examples of job titles under Mathematician, Actuary and Statistician

³ The Future of Jobs Report 2018, World Economic Forum: <https://bit.ly/33M3yLV>



CHEMIST

- A certificate from Department of Chemistry Malaysia (JKM) is an important requirement to qualify as chemist.
- Pharmaceutical chemist is also an occupation on the rise⁴.
- The key competencies in demand for chemists (in chemical, petrochemical and oleochemical sub-industries) are process technology, product application & knowledge, data analysis, lab testing, reporting, instrumentation, and project management⁵.



CYBERSECURITY⁶

- As Malaysia shifts to a digital economy, cybersecurity will continue to be essential in safeguarding users against cyber breaches including data theft and sabotage.
- The demand for cybersecurity professionals has increased exponentially with the growing integration of the Internet of Things (IoT) and cloud computing in the processes and operations of companies across multiple industries.
- In PIKOM's Job Market Outlook Report 2018, cybersecurity was identified as one of the highest paying professions in Malaysia.



MECHANICAL ENGINEER

- This occupation is in high demand by employers and has appeared in all four editions of the COL since 2015.
- Mechanical Engineers are also highly sought after by numerous sectors including Plastics, Chemical, Electrical & Electronics, Medical Devices and Machinery Equipment.



SOFTWARE DEVELOPERS⁷

- By 2022, the total task hours performed by machines across 12 industries (including ICT) is expected to increase to 42%, up from 29% in 2018⁸.
- With heightened digital penetration, mobile and e-commerce related companies are expected to expand their businesses and in the coming years, heightened employer demand is expected particularly for mobile engineers and software developers⁹.

⁴ Human Capital Issues within the Pharmaceutical Manufacturing Sector, Environmental Scan 2018

⁵ Human Capital Issues in Chemical and Petrochemical Industries, Environmental Scan 2018

⁶ Cyber Security is an example of job title under Systems Analyst

⁷ Software engineer and programmer/developer have also been highlighted as one of the top trending jobs by surveyed companies of MDEC Digital Talent Report

⁸ The Future of Jobs Report 2018, World Economic Forum: <https://bit.ly/33M3yLV>

⁹ The Future of Jobs Report 2018, World Economic Forum: <https://bit.ly/33M3yLV>



EARLY CHILDHOOD EDUCATORS

- Early Childhood is one of the most in-demand professions today, due to a general increase in the demand for child care.
- The Ministry of Rural Development (KPLB) aims to ensure that teaching staff of KEMAS nurseries and kindergartens nationwide will be required to have at least a Bachelor's degree in Early Childhood Education within the next 10 years. This was announced as part of the KEMAS Early Childhood Services Quality (PKPAK) 2020-2030 Plan, which aims to improve the quality of early childhood education services in Malaysia.
- Currently, 9,387 out of 11,196 KEMAS teachers have an Early Childhood Education Diploma. KEMAS' target over the next five years (2019-2023) is to have 835 individuals pursuing the Early Childhood Education Diploma.
- To date 227,267 children between the ages of four and six have gone through preschool at 509 KEMAS nurseries and 10,966 kindergartens nationwide¹⁰.



WELDERS AND FLAME CUTTERS

- The significant shortage of these occupations reflects a lack of public awareness and recognition regarding the highly skilled nature of these professions.
- Although the task automatability of Welders and Flame Cutters stands at nearly 80%, the automation in these occupations is still low as compared to those in developed countries.

Find out more about the COL and other sought-after occupations at www.talentcorp.com.my/col or www.ilmia.gov.my/index.php/en/component/zoo/item/critical-occupations-list-report-2018-2019

¹⁰ MalayMail Online, Rural Development Ministry: Target for KEMAS teaching staff to have degrees within 10 years, <https://bit.ly/2Qh4AvF>

OTHER OCCUPATIONS ON THE 2018/2019 CRITICAL OCCUPATIONS LIST

1	Managing Director and Chief Executive
2	Finance Manager
3	Human Resource Manager
4	Policy and Planning Manager
5	Business Service Manager
6	Business Services and Administration Manager Not Elsewhere Classified
7	Sales and Marketing Manager
8	Advertising and Public Relations Manager
9	Research and Development Manager
10	Manufacturing Manager
11	Construction Manager
12	Information and Communications Technology (ICT) Manager
13	Geologist and Geophysicist
14	Industrial and Production Engineer
15	Civil Engineer
16	Chemical Engineer
17	Mining Engineer, Metallurgist and Related Professional
18	Engineering Professional (Excluding Electrotechnology) Not Elsewhere Classified
19	Electrical Engineer
20	Electronic Engineer
21	Aircraft Pilot and Related Professional
22	Manufacturing Professional
23	Environmental and Occupational Health and Hygiene Professional
24	University and Higher Education Professional Teacher

25	Financial and Investment Adviser
26	Financial Analyst
27	Advertising and Marketing Professional
28	Applications Programmer
29	Software and Applications Developers and Analysts Not Elsewhere Classified
30	Systems Administrator
31	Computer Network Professional
32	Database and Network Professional Not Elsewhere Classified
33	Civil Engineering Technician
34	Mechanical Engineering Technicians
35	Physical and Engineering Science Technician Not Elsewhere Classified
36	Manufacturing Supervisor
37	Others Supervisor Not Elsewhere Classified
38	Commercial Sales Agent
39	Chef
40	Receptionist
41	Agricultural and Industrial Machinery Mechanic and Repairer
42	Electrical Mechanic and Fitter
43	Bakers, Pastry, Pasta and Confectionery Maker
44	Tailor, Dressmaker, Furrier and Hatter
45	Rubber Products Machine Operator
46	Steam Engine and Boiler Operator
47	Stationary Plant and Machine Operator Not Elsewhere Classified
48	Heavy Truck and Lorry Driver
49	Mobile Farm and Forestry Plant Operator

Note: The Critical Occupations List (COL) is constructed based on the Malaysia Standard Classification of Occupations (MASCO) 2013

WAY FORWARD



Future considerations to improve the COL methodology

Subject to the availability of new data sources and research methodologies, the following examples are some enhancements to be considered to improve the COLs analyses:

Short-Term

- **Automatability profile:**
To measure probability of automation by certain tasks and attributes that is associated with a particular occupation.
- **Skills profile:**
To list out the top associated skills which is high on demand or in shortage.

Long-Term

- **Piloting State-Level COLs:**
The production of state-level COLs offers the potential to identify shortages in local labour markets that are not apparent at the national level. This would require the need for location information that allows for identification of relevant localised regions and detailed occupational information (that is, the 4-digit level of MASCO) as it is used as unit of analysis, and devotion of additional resources in the bottom-up processes in order to ensure the representativeness of the data for each state.
- **Incorporate the use of real-time labour market information:**
Real-time information, such as: online job postings, can be used to complement current official datasets by generating new insights in the area of (but not limited to): sector, location, education, and certification. This information can help policymakers to address shortages quickly in an accurate manner.

Potential future usage of the COL in other human capital initiatives

The main purpose of the COL is to be fully utilised for the purpose of coordinating our national human capital policy. The COL can be used in other national human capital initiatives as depicted below:



- Inform development of TVET and higher education curriculum/programming.
- Inform development of occupational standards and accreditation.
- Target funding for TVET and higher education programming.
- Target incentives to businesses for apprentices.



- Inform career counsellors about occupations in shortage.
- Target upskilling and reskilling for jobseekers.



- Target admissions to foreign expatriates in occupations on the COL, until Malaysians become available to fill those occupations in Malaysia.



THE CRITICAL SKILLS MONITORING COMMITTEE (CSC)

With its mandate to monitor skills imbalances in Malaysia, the Critical Skills Monitoring Committee (CSC) develops the annual Critical Occupations List (COL) which serves as a platform for the coordination of human capital development policies.

The CSC is led by two agencies under the Ministry of Human Resources (MOHR): Talent Corporation (TalentCorp) and the Institute for Labour Market Information and Analysis (ILMIA). This institutional structure enables the CSC to draw on ILMIA's labour market information sources (including its Labour Market Information Data Warehouse) and on TalentCorp's ties with stakeholders in the private sector.



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