Training Indonesia’s Digital Workforce

September 2022
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Acknowledgment

This report has been prepared by Katalis in partnership with:

Katalis acknowledges the input of Indonesian employers and Australian TVET providers who contributed through a series of interviews and survey of Australian TVET.

IA-CEPA ECP Katalis (Katalis) is a unique, five-year (2020-25) government-backed business development program unlocking the vast potential of economic partnership between Australia and Indonesia.
By 2030, Indonesia needs 17 million+ tech talents to support the growth of the digital economy.

Airlangga Hartarto
Coordinating Minister for Economic Affairs

Indonesia has one of the fastest growing digital services industries in the world. Home to over ten digital unicorns – digital companies valued at over USD 1 billion – and with over 100 million internet users, the digital economy is an important driver of Indonesia’s growth and development. Growth in the digital services sector is generating huge demand for digital and related business skills. New data developed by Prospera\(^1\) identified 50,000 jobs requiring digital skills being advertised in the 6 months to June 2022, making digital skills the most in-demand in Indonesia.

Indonesia’s current workforce lacks the skills to meet existing demand. Research by SMERU in 2022 found that 50% of Indonesia’s labour force has basic to intermediate digital skills, while advanced digital skills represent less than 1%. Less than 2% of workers with a secondary, junior-secondary, or lower level of education, have received ICT skills training, while 32% of workers with a diploma or university degree have received training.\(^2\)

The digital skills gap presents an opportunity for Australian technical skills and training providers. Australia’s Technical Vocational, Education and Training (TVET) sector is world leading. It aligns to industry demand and is focused on skills application, scalability and flexibility. Australian TVET providers are well placed to support Indonesian businesses to build their workforce capability, being a trainer of choice for Indonesian students.

This Katalis Market Insight provides an overview of the demand and supply of digital skills in Indonesia. Informing this Market Insight is original analysis of the demand for digital skills by Indonesian businesses based on all available job advertisements in Indonesia.\(^3\) The supply of digital skills and training reflects findings from a survey of Australian TVET providers.\(^5\) A more detailed discussion of Australia’s TVET capability in Indonesia is available in a separate Katalis Market Insight.

Australian and Indonesian government support is available to close the digital skills gap. In 2020, the Indonesian and Australian governments entered a Comprehensive Economic Partnership Agreement (IA-CEPA) which opened new trade and investment opportunities for Australian TVET providers in the Indonesian market. Katalis, a program designed to support the implementation of IA-CEPA, is available to help connect Indonesian businesses with Australian TVET providers to close the skills gap in Indonesia. A new TVET Clearinghouse will be established in 2022 to support businesses to connect.

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\(^1\) Prospera is an economic governance program based in Indonesia and funded by the Australian Government in Indonesia. See https://prospera.or.id.

\(^2\) The SMERU Research Institute, Digital Skills Landscape in Indonesia, 2022, Indonesia https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjktrKy0ar4AhUQTt8KHYYh0AQFnoECAQQAQ&url=https%3A%2F%2Fsmeru.or.id%2Fen%2Ffile%2F4519%2Fdownload%3Ftoken%3D0HU6OfQK&usg=AOvVaw3UHBk4RJP65Y5jGhDJDNm

\(^3\) Prospera Labour Market and Jobs Model for Indonesia, 2022.


\(^5\) Katalis conducted a survey of Australian TVET providers in May 2022. Responses were received from 20% of all Australian TAFEs and small number of the more than 4000 Australian registered training organisations (RTOs). The survey was developed and conducted by Katalis in partnership with Equity Economics.
The Indonesian economy is rapidly digitising. Already amongst the world’s largest population of online users, COVID-19 accelerated adoption of digital services with no sign of reversal. Indonesia saw an additional 21 million new digital consumers coming online since the start of the pandemic. Between 2020 and 2021, the internet economy in Indonesia grew by 49% from USD 47 to USD 70 billion and is expected to reach USD 146 billion by 2025. Indonesia’s digital growth is propelled by record investment in Indonesian tech start-ups. In the first half of 2021, USD 4.7 billion was invested into the Indonesian tech sector compared with USD 4.4 billion for the full prior year ensuring demand for digital roles is set to grow for years to come.

E-Commerce is projected to drive growth in Indonesia’s digital economy, with growth also projected in related sectors including transport and food, online media and online travel which is recovering from COVID contraction. In addition, services such as data warehousing, software development and software as service are key employers.

Projected growth in the Indonesian digital economy

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2025 (proj)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-commerce</strong></td>
<td>USD 21 billion</td>
<td>USD 35 billion</td>
<td>USD 53 billion</td>
<td>USD 104 billion</td>
</tr>
<tr>
<td><strong>Transport and food</strong></td>
<td>USD 5.7 billion</td>
<td>USD 5.1 billion</td>
<td>USD 6.9 billion</td>
<td>USD 16.8 billion</td>
</tr>
<tr>
<td><strong>Online media</strong></td>
<td>USD 3.5 billion</td>
<td>USD 4.3 billion</td>
<td>USD 6.4 billion</td>
<td>USD 15.8 billion</td>
</tr>
<tr>
<td><strong>Online travel</strong></td>
<td>USD 10.1 billion</td>
<td>USD 2.6 billion</td>
<td>USD 3.4 billion</td>
<td>USD 9.7 billion</td>
</tr>
</tbody>
</table>

7 Prospera analysis
Rapid digitisation is creating extraordinary demand for skilled digital workers. In the 12 months to June 2022, nearly 80,000 new Information and Communications Technology (ICT) roles were advertised with 50,000 in just the last 6 months.

Despite this demand and a generation of digital natives, the digital skills sector in Indonesia is lagging. With a war for qualified talent, many employers take the route of recruiting graduates and providing further training in-house. Larger companies, with more extensive staffing needs may not be able to recruit in the Indonesian market instead opt to outsource to other countries such as India, presenting a major missed economic opportunity for Indonesia.

Source: Prospera Analysis
The Digital Skills and Training Opportunity in Indonesia

**Jobs data confirms the skills and training most in-demand by digital businesses in Indonesia.** Key insights include: the need to focus on specific technical skills, as opposed to a level of qualification. Interviews show employers need intermediate and advanced digital skills as well as entry level skills and complementary skills, such as project management, leadership and business skills. The pay point and number of job applicants confirms high demand and growing capacity to pay for skills and training.

**Digital employers are seeking specific skills, not necessarily high-level qualifications.** Job advertisements for digital roles in Indonesia tend to be specific about the skills required, particularly in relation to programs and software, as opposed to the level of qualifications.

**Typical in-demand intermediate and advanced digital skills training**

- Product management
- Software engineering
- Data science
- Software engineers (UI/UX)
- Product design (UI/UX)
- Product engineer and other software
- Digital marketing

**Top 20 Advertised Roles in Digital Sector, June 2021 - June 2022**

<table>
<thead>
<tr>
<th>Role</th>
<th>Number of roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back end engineer</td>
<td>670</td>
</tr>
<tr>
<td>System analyst</td>
<td>584</td>
</tr>
<tr>
<td>Programmer</td>
<td>568</td>
</tr>
<tr>
<td>IOS developer</td>
<td>450</td>
</tr>
<tr>
<td>Data engineer</td>
<td>442</td>
</tr>
<tr>
<td>Mobile developer</td>
<td>428</td>
</tr>
<tr>
<td>Net developer</td>
<td>423</td>
</tr>
<tr>
<td>Sales executive</td>
<td>408</td>
</tr>
<tr>
<td>Devops engineer</td>
<td>403</td>
</tr>
<tr>
<td>UI/UX designer</td>
<td>401</td>
</tr>
<tr>
<td>Project manager</td>
<td>398</td>
</tr>
<tr>
<td>Web developer</td>
<td>382</td>
</tr>
<tr>
<td>Java developer</td>
<td>380</td>
</tr>
<tr>
<td>Product manager</td>
<td>377</td>
</tr>
<tr>
<td>Graphic designer</td>
<td>374</td>
</tr>
<tr>
<td>Android developer</td>
<td>371</td>
</tr>
<tr>
<td>Full stack developer</td>
<td>370</td>
</tr>
<tr>
<td>Account manager</td>
<td>366</td>
</tr>
<tr>
<td>Front end developer</td>
<td>365</td>
</tr>
<tr>
<td>Back end developer</td>
<td>362</td>
</tr>
</tbody>
</table>
Employers value training that places an emphasis on practical and applied skills over theory. Interviews with employers revealed that beyond entry-level technical skills employers are seeking other skills in their digital talent such as project management, creative thinking, problem solving and teamwork. This could be the capability to design digital information systems, product innovation and/or digital process improvements. Interviews also revealed demand for management training as a new generation of start-ups continue to grow. For graphic design, despite designers with good graphic skills there is a shortage of designers with the other required professional skills. Furthermore, employers associated Australian TAFEs with the ability to train staff in practical application of skills.

The sector is more flexible with regards to minimum qualifications. While several employers require a degree or diploma, many recruiters are focusing instead on specific skills, rather than a qualification level. This points to the need for training in specific capabilities and data products or programs, as opposed to higher level qualifications. TVET programs can be well suited to skills development, applied and specific to a particular industry. Major digital platforms are recruiting from different sources to traditional academic institutions, including digital boot-camps where specific skills are being developed.

Digital skills are likely to be amongst the most commercially viable training courses in Indonesia. ICT roles are attractive employment options with higher-than-average starting salaries but lower than average minimum work experience. This suggests an opportunity to reach a group with relatively strong salary expectations, early in their careers. This presents long-term training opportunities, as well as a viable market for students and businesses to invest in skills and training.
Digital jobs are highly sought after with above average applicant rates for each opening. The job market for digital services is highly competitive, with above average numbers of applicants for each position advertised. This points to the benefit of investment in skills and training to differentiate and build capability amongst individuals and the digital services workforce. High application rates also confirm the desirability of work in digital services.

Insights are available into the skill needs of major digital employers. Analysis of jobs data also identifies major industry segments seeking skills, which can inform the design of TVET skills and training to target and reach a larger cohort. This improves the commercial viability of training, while also meeting large areas of skills needs in Indonesia. Furthermore, interviews show employers associate Australian training with a superior emphasis on commercially useful applied skills. Demand is also highly concentrated in Java.

![Application rates per vacancy, June 2021- June 2022](Source: Prospera Analysis)

**Top Roles**
- Product Manager
- Graphic Designer
- Back End Developer
- Front End Developer
- UI/UX Designer

**Most requested skills**
- Communication skills
- Sales & Marketing
- Business Development & Partnerships
- Marketing Communications

**Software services/SaaS**
- Back End Developer
- Front End Developer
- Full Stack Developer
- Web Developer
- Account Manager

**Top Roles**
- Branch Manager
- Admin Officer
- Security
- Graphic Designer
- Student Advisor

**Most requested skills**
- Communication skills
- Digital Marketing
- Business Development
- Marketing Communications
- Marketing Strategy

**Other** (ride-hailing, digital financial services, health, digital animation, EdTech, online travel)

**Top Roles**
- Account Manager
- Back End Developer
- Front End Developer
- Account Executive
- Network Engineer

**Most requested skills**
- Communication skills
- Digital Marketing
- Project Management
- Adobe Photoshop
- Sales & Marketing

**Telecommunications**

**Top Roles**
- Account Manager
- Back End Developer
- Front End Developer
- Account Executive
- Network Engineer

**Most requested skills**
- Communication skills
- Microsoft Office
- Microsoft Excel
- Negotiations
- Sales

**Media & Publishing activities**

**Top Roles**
- Graphic Designer
- Sales Executive
- Account Executive
- Marketing
- Content Creator

**Most requested skills**
- Communication skills
- Digital Marketing
- Project Management
- Adobe Photoshop
- Sales & Marketing

**E-commerce**

**Top Roles**
- Product Manager
- Graphic Designer
- Back End Developer
- Front End Developer

**Most requested skills**
- Communication skills
- Sales & Marketing
- Business Development & Partnerships
- Marketing Communications

**Source:** Prospera Analysis
Top recruiting companies vary with time as the industry continues to grow and develop, over a broad range of digital segments.

Top ICT employers by segment
June 2021-June 2022

**Telecommunications**
- Recruiting Companies
  - Smartfren Telecom
  - Fiberhome Technologies Indonesia
  - Karya Solusi Prima Sejahtera
  - FiberStar
  - Indonusa Telemedia

**IT service activities**
- (Digital marketing, website, analytics, operation software, cloud storage, collaboration tools)
  - Recruiting Companies
    - PT Qtera Mandiri
    - PT Berca Hardayaperkasa
    - PT Nusantara Compnet Integrator
    - PT Asian Sigma Technology
    - NTT Global Data Centers
    - Widya Inovasi Indonesia

**Software/app developers/SaaS**
- Recruiting Companies
  - Majoo Teknologi Indonesia
  - Sircl
  - HashMicro
  - Simplefi Teknologi Indonesia
  - Mekari
  - Mid Solusi Nusantara
  - Berlian Sistem Informasi
  - Mitrais
  - Cyberindo Aditama
  - Olsera Indonesia Pratama
  - HTC Global Software Services

**Media & Publishing activities**
- Recruiting Companies
  - Kompas Gramedia
  - Detik.com

**Ride-hailing, health, digital animation, edtech, online travel, digital financial services: payments, remittances, insurance, lending.**
- Recruiting Companies
  - Ruangguru
  - Gojek
  - Grab Taxi Indonesia
  - Zenius Education
  - LingoTalk
  - Hangry

**E-Commerce**
- Recruiting Companies
  - Shopee
  - Somethinc – Beautyhaul
  - Tokopedia
  - Aruna
  - Hypefast
  - Dekoruma

Source: Prospera Analysis
Current and Emerging Indonesian Digital Training Offerings

Indonesia digital skills education faces 4 main challenges, namely: access, price, quality and scale. To meet these challenges, Indonesia is seeing a growth in training formats – including degrees provided by government and private universities, diplomas delivered through private TVET providers, digital boot camps and VC backed online training offerings. There is also secondary education provided by vocational high schools called Sekolah Menengah Kejuruan (SMK).

Employers are increasingly turning to digital bootcamps to meet demand for talent. While the number of digital boot camps has grown significantly over the past few years, gaps remain in providing high quality training, for example by providing foundations for future career movements from entry-level to middle management positions. In the University sector there is a demonstrated willingness to pay a premium for a joint degree qualification with an international partner.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Example digital training providers</th>
<th>Typical offerings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Universities</td>
<td>Telkom University (Telkomsel), Binus University (IBM), Pelita Harapan University, Universitas Multimedia Nusantara (Kompas-Gramedia)</td>
<td>Local degree (AUD 2000-4000 p.a. plus AUD 2000-4000 upfront fee). Degree with international partner (AUD 5000-8200 p.a. plus international partner fee)</td>
</tr>
<tr>
<td>Government Universities</td>
<td>Bandung Institute of Technology, Universitas Gadjah Mada, Universitas Indonesia</td>
<td>Local degree (means tested between AUD 500-2500 p.a.) Degree with international partner (AUD 2000-3000 p.a. plus AUD 2500 upfront fee)</td>
</tr>
<tr>
<td>Private Polytechnics</td>
<td>LP3i, Caltex Riau Politeknik (Chevron)</td>
<td>Diploma (AUD 1000-3000 p.a.)</td>
</tr>
<tr>
<td>Government Polytechnics</td>
<td>Politeknik Negeri Jakarta, Politeknik Elektronika Negeri Surabaya</td>
<td>Diploma (means tested AUD 100-2000 p.a.)</td>
</tr>
<tr>
<td>Upper Secondary Technical education (SMK)</td>
<td>SMK Bintang Nusantara</td>
<td>No fee</td>
</tr>
<tr>
<td>Digital training start-ups</td>
<td>BinarAcademy [Indonesia], Hacktv8 [Indonesia], Purwadhika [Indonesia]</td>
<td>AUD 100-4000 for a boot camp depending on the qualification</td>
</tr>
<tr>
<td>Digital Bootcamps</td>
<td>Coders Lab, Impact Byte, OneTwoCode</td>
<td>Digital marketing: AUD 1000-1500, Software engineering: AUD 2000-3000, Data science: AUD 4000</td>
</tr>
<tr>
<td>Online Courses</td>
<td>Various online providers</td>
<td>AUD 0-100 per course</td>
</tr>
</tbody>
</table>

Investment in training remains a challenge in Indonesia, but funding opportunities are emerging. With an estimated 900,000 digital workers in Indonesia⁸, employers are expected to spend AUD 135 million annually on staff training.⁹ In interviews, Venture Capital (VC) funded digital start-ups had larger training budgets but were more sensitive to employee time commitments and will be looking for training specific to their needs. At entry level, the Kartu Prakerja program offers jobseekers digital cash to purchase online courses up to a value of approximately AUD 100 to Indonesian job seekers. In 2022 more than 200,000 jobseekers completed short format 7-8 hour online technical and IT courses priced at between AUD 40-50 per course, representing an estimated market size of AUD 10 million.

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⁹ Assumes staff training budget of 1% of employment costs and employment costs of digital staff about AUD 14,000 per year and 900,000 digital workers.
A Unique Opportunity for Australian TVET

The digital skills space presents a unique opportunity to build a TVET presence in Indonesia. As Australian TVET providers look to diversify their markets, including moving offshore, into new geographies and deploying new delivery models, Indonesia presents a priority market. 27% of Australian TVET providers who responded to a Katalis survey are already delivering skills and training in Indonesia. A further 55% have interest in entering the Indonesian market.

Australian qualifications are well regarded in Indonesia and by Indonesian students. Australia is Indonesia’s top overseas study destination. 60% of TVET providers surveyed are already delivering skills and training to Indonesian students, including in business management, sales and marketing, tourism, health, software development and IT support. Innovative delivery models and making training available in Indonesia will only expand Australia’s existing Indonesian market to a much larger populace. The prospect of achieving a partial credit or recognition towards an Australian qualification is likely to be motivating for Indonesian digital workers looking to upskill.

Australian TVET providers are well placed to deliver the range of skills and training models required. This includes online short courses for jobseekers, self-paced online modules for professional upskilling, digital bootcamps, customised workplace training and partnerships with polytechnics or universities to provide diploma or degree qualifications. While having a physical presence, even if small, is highly valued to create the assurance to Indonesia that the operation is credible and sustainable, digital training formats and blended learning are increasingly acceptable. Two Australian TAFEs have Indonesian locations; others have local partners in Indonesia including Muhammadiyah Foundation, Binus University and LP3i Polytechnics. 60% of Australian TVET survey respondents indicated they can provide tailored training to meet the needs of specific businesses, with employer sponsored training models.

Existing courses provided by Australian TVET can meet immediate demand for skills. 87% of Australian TVET providers surveyed have courses suited for Indonesian delivery, including courses currently ready and available and those that could be delivered to meet the specific needs of an Indonesian audience within 1 to 24 months. The most common training is in business skills at 83%, while 42% have digital skills courses suited for Indonesian delivery currently available.

Do you have existing courses suited to offshore delivery in the following areas?

Relevant Training delivered by Australian TVET to Indonesian students in Australia or remotely
- Business
- Sales and Marketing
- Digital Communications
- IT Support
- Software Development
- Cybersecurity
- Applied Blockchain
- Health and Tourism

![Bar chart showing the distribution of relevant training areas.](chart.png)
Key Takeaways

The rapid expansion of Indonesia’s digital services sector requires a massive expansion in digital skills and training to meet Indonesia’s workforce needs.

There is an alignment between Indonesia’s large digital skills gap and Australia’s TVET offering. This includes skills and training credentials currently available in technical ICT and digital skills, as well as complimentary skills in business, product management, leadership and management.

Indonesian digital businesses are looking for new ways to train and skill employees and meet their workforce needs. While sourcing skills offshore has been necessary, there is interest in training the local workforce through innovative training modules, designed to meet a specific business need, while avoiding employees being offshore and away from work for extended periods. At the same time, digital businesses indicate a greater willingness to fund workforce training, relative to more traditional industries in Indonesia, as the demand for skilled team members continues to grow.

Australian training providers are ready to meet Indonesia’s skills needs. 60% of Australian training providers surveyed provide courses tailored to the needs of specific businesses, working directly with firms to meet their skills requirement in-house, avoiding the loss of staff for extended periods and filling skills gaps, with potential to feed into Australian qualifications over time.

With the support of the Indonesia and Australian governments, Katalis is establishing a bilateral TVET Clearinghouse to connect Indonesian employers with high-quality Australian TVET providers that can meet their specific training needs.

Katalis can help you connect. If you are an Indonesian digital services business looking to deliver training to your employees, contractors or clients, or an Australian TVET provider able to deliver digital skills and training in the Indonesian market, contact Clarice Campbell, clarice.campbell@iacepa-katalis.org to discuss opportunities.

A mutually beneficial trade and development opportunity

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**Indonesian landscape**
- Limited quality domestic TVET
- Providers failing to meet industry needs
- Limited public awareness of TVET
- High cost of overseas training
- Looking for step-change, not business as usual

**Australian TVET opportunity**
- Respected TVET sector
- Highly suitable course offerings
- Improving online offering and blended formats
- Seeking closer ties to Indonesia
- Looking to diversify markets