

SKILLS FOR THE FUTURE:

CAPTURING THE ECONOMIC OPPORTUNITY OF DIGITAL SKILLS IN INDONESIA

αlphaβeta
strategy x economics





CONTENTS

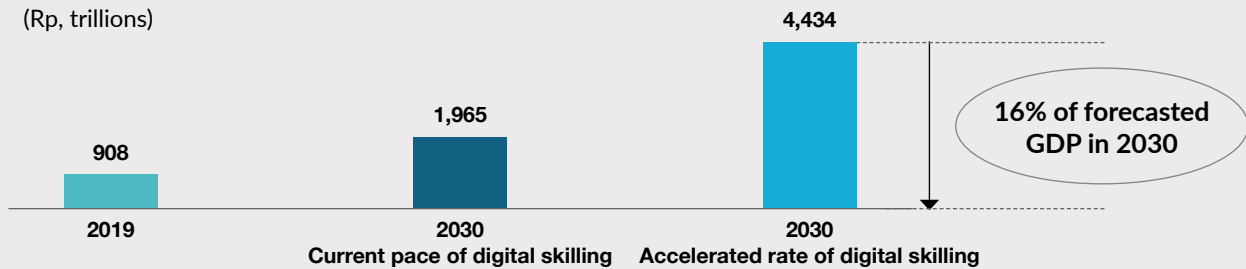
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INDONESIA'S DIGITAL SKILLS OPPORTUNITY



**A DIGITALLY SKILLED WORKFORCE CAN CONTRIBUTE
RP 4,434 TRILLION (US\$303 BILLION) TO INDONESIA'S GDP BY 2030**

GDP CONTRIBUTIONS OF DIGITALLY SKILLED WORKFORCE
(Rp, trillions)



**THE DIGITAL SKILLS AGENDA COMPRISES 3 AREAS OF ACTION –
EACH WITH INTERNATIONAL BEST PRACTICES**

EQUIP THE CURRENT WORKFORCE WITH DIGITAL SKILLS



Established through a public-private partnership, Sweden's "Digilyft Kickstart" program enhances digital adoption by MSMEs in the manufacturing sector

1

PREPARE THE NEXT GENERATION OF WORKERS



Finland's "phenomenon-based teaching and learning" system seeks to cultivate "soft skills" such as independent and critical thinking

2

BROADEN DIGITAL ACCESS TO ALL



United Kingdom's "Future Digital Inclusion" program provides targeted digital skilling opportunities to underserved communities to boost their digital literacy and employability

3

GOOGLE PLAYS AN IMPORTANT ROLE IN THE COUNTRY



Google has trained
OVER 1.8 MILLION

small and medium businesses in digital marketing skills through the "Gapura Digital" and "Women Will" training initiatives under its "Grow with Google" program and supported

OVER 550,000

Indonesian women leverage technologies to build their own business



The "Grow with Google" program in Indonesia has helped

OVER 320,000

small business owners weather the COVID-19 pandemic by equipping them with digital tools



In 2019, Google's applications supported over

RP 165 TRILLION

(US\$11.3 billion) worth of **consumer benefits¹**, and

RP 185 TRILLION

(US\$12.7 billion) in **direct business benefits²**

1. Consumer benefits were estimated for the following Google products: Search, Google Maps, Drive, and Google Play

2. Business benefits were estimated for the following Google products: Search and Ads, AdSense, and Google Play

EXECUTIVE SUMMARY

Digital skills are crucial for Indonesia's success in the 21st century. Despite possessing many of the elements considered advantageous to rapid economic growth such as a rich natural resource base, a young population and a growing services sector, the country's annual GDP growth rates have largely remained at 5 percent over the past five years.¹ This is below the government's growth target – recently downgraded from 7 to 6 percent.² To achieve a 7 percent per annum growth rate to 2030, a past study has shown that the country's labor productivity will need to grow by 60 percent more than the increase achieved in the period of 2000-2010.³ Digital skills will form a major component of this.

Not only are digital skills essential for workers in the technology sector, they are also important for traditional sectors. Digital skills will be just as important in Indonesia's non-technology sectors such as manufacturing and professional services, where companies are increasingly seeking to adopt new technologies to improve their productivity. A recent survey revealed that almost a quarter (22 percent) of Indonesian employers expect entry-level candidates to be computer literate.⁴ Ensuring that all firms benefit from digital skills is also important in Indonesia given that micro, small and medium enterprises (MSMEs) constitute 99 percent of all enterprises and contribute to over 60 percent of the national GDP.⁵ This is particularly crucial

given that low access to skilled labor has been cited by the country's MSME employers to be one of the largest barriers to scaling up.⁶

This study aims to address the economic significance of digital skills in Indonesia. Despite a range of literature on the productive opportunity posed by digital technologies for Indonesia's economy, there is limited research on the economic value of digital skills – both within and outside of the technology sector. To address this knowledge gap, the report assesses the value of digital skills by evaluating the GDP contributions of digitally skilled workers across all sectors and levels of digital skills.

This study finds that at an accelerated pace of skilling, digitally skilled workers can contribute Rp 4,434 trillion (US\$303.4 billion) to Indonesia's GDP by 2030. This is a significant value that could account for 16 percent of total forecasted GDP that year. By comparison, digitally skilled workers contribute an estimated 6 percent of GDP today.

The key messages of this report include:

- **Digitally skilled workers are an important driver of Indonesia's economy today – and not just in the technology sector.** Today, digitally skilled

1. International Monetary Fund (2020), "Real GDP growth."

Available at: <https://www.channelnewsasia.com/news/business/indonesia-economy-targets-up-to-6-percent-gdp-growth-5-years-11750214>

2. Channel News Asia (2019), "Indonesia's planning ministry targets up to 6% GDP growth in next 5 yrs."

Available at: <https://www.channelnewsasia.com/news/business/indonesia-economy-targets-up-to-6-percent-gdp-growth-5-years-11750214>

3. McKinsey Global Institute (2012), The archipelago economy: Achieving Indonesia's growth potential. Available at: https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Asia%20Pacific/The%20archipelago%20economy/MGI_Unleashing_Indonesia_potential_Full_report.ashx

4. Yunnice Marzuki (2017), "Indonesian employers expect entry-level talent to have digital skills: LinkedIn." Digital New Asia.

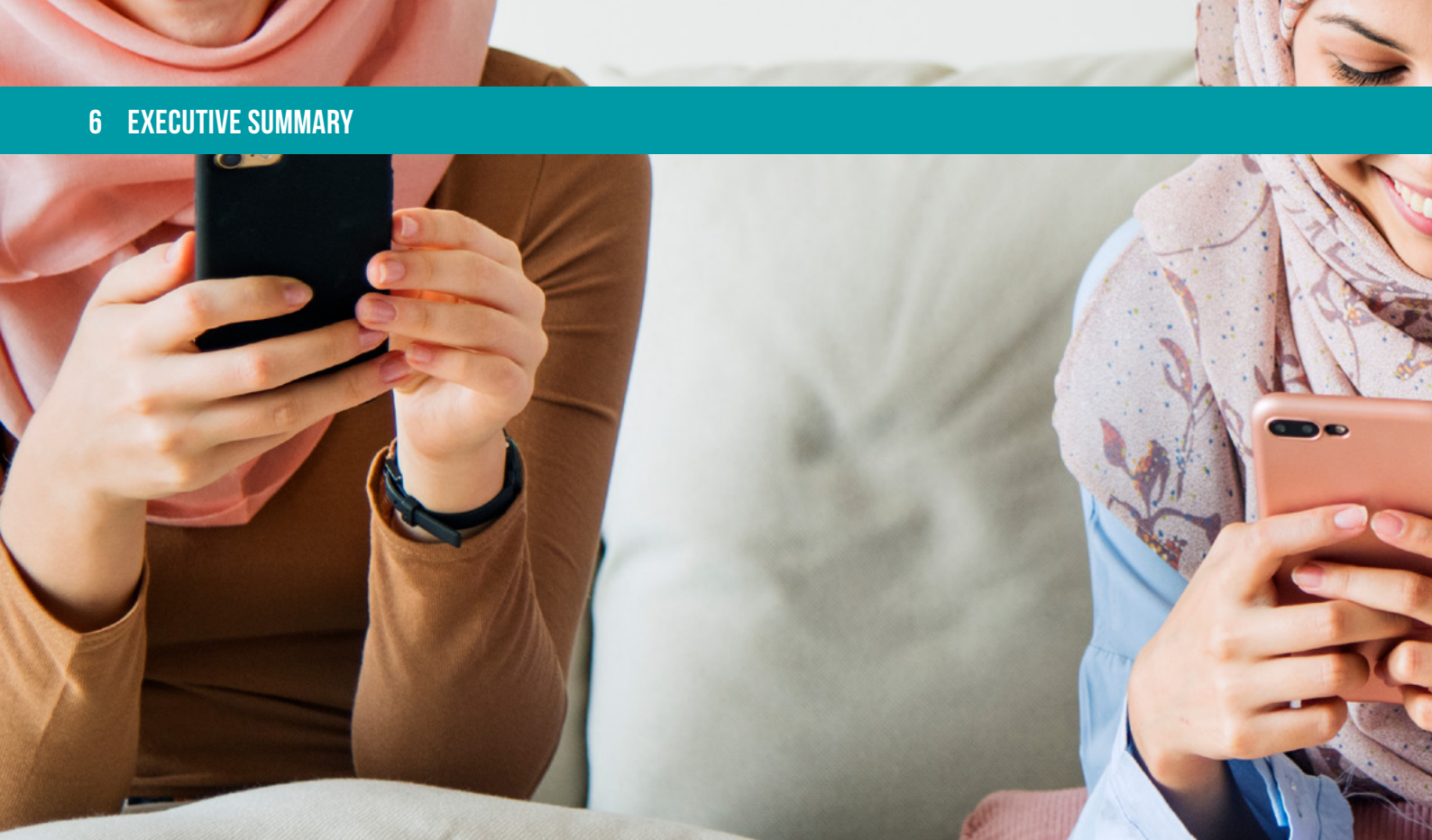
Available at: <https://www.digitalnewsasia.com/digital-economy/indonesian-employers-expect-entry-level-talent-have-digital-skills-linkedin>

5. Ministry of Cooperatives and SMEs, Indonesia (2018), Perkembangan data usaha mikro, kecil, menengah (UMKM) dan usaha besar (UB) tahun 2016 – 2017.

Available at: http://www.depkop.go.id/uploads/laporan/1549946778_UMKM%202016-2017%20rev.pdf

6. Asia Pacific Foundation of Canada (2019), 2018 survey of entrepreneurs and MSMEs in Indonesia.

Available at: https://apfcanada-msme.ca/sites/default/files/2018-10/2018%20Survey%20of%20Entrepreneurs%20and%20MSMEs%20in%20Indonesia_0.pdf



workers in Indonesia contribute an estimated Rp 908 trillion (US\$62.1 billion) to the country's GDP annually. This is equivalent to about 6 percent of Indonesia's GDP in 2019. Contrary to conventional belief that much of this value is likely to be driven by the technology sector, almost three quarters (73 percent) of this value comes from non-technology sectors such as manufacturing and professional services.

- **Sectors that are more resilient to the COVID-19 pandemic are also those with a stronger presence of a digitally skilled workforce today.** The sectors that have been projected to be least impacted by the pandemic are also those that experience the highest relative GDP contributions from digitally skilled workers. In more COVID-resilient sectors such as the financial services, professional services and media and publishing sectors, such workers currently contribute 7 to 11 percent of the overall GDP. On the other hand, in less COVID-resilient sectors, such workers – which make up a smaller percentage of the workforce – account for lower GDP contributions ranging from 3 percent (in the transport services and hospitality sectors)

to 5 percent (in the retail sector). This indicates that workforce digital skills are potentially important in driving business resilience during the pandemic.

- **With the right level of support, digitally skilled workers can contribute Rp 4,434 trillion (US\$303.4 billion) to Indonesia's GDP by 2030.** Based on current digital skilling trends, the value of digital skills in the country is projected to reach Rp 1,965 trillion (US\$134.5 billion) in 2030. However, there is an opportunity for the country to go even further. By 2030, if Indonesia accelerates its digital skilling rate, such workers could bring an estimated Rp 4,434 trillion (US\$303.4 billion) worth of GDP contributions to the country's economy.⁷ This is Rp 2,469 trillion (US\$168.9 billion) larger than the projected value based on the country's current pace of skilling – at Rp 1,965 trillion (US\$134.5 billion).
- **Non-technology sectors are projected to see the highest growth in GDP contributions from digitally skilled workers between 2019 and 2030.** In particular, the professional services, manufacturing and construction sectors are projected to be some

7. Under this scenario (termed the "Accelerated" scenario), Indonesia is assumed to match the current digital skill penetration rate of the workforce in countries of comparable economy sizes that currently register the highest digital skill penetration rates – the United Kingdom and Netherlands.



of the largest beneficiaries from digital skills in 2030. Non-technology sectors are also expected to see some of the largest increases in their associated digital skills values – even surpassing that of the technology sector. The professional services sector, for example, is projected to see almost a 10-fold increase in its digital skills value between 2019 and 2030.

- Digitally upskilling workers in Indonesia's hardest hit sectors will be a crucial part of the economic recovery process.** In the sectors that are being hardest hit by the COVID-19 pandemic – hospitality, food services and retail – digitally skilled workers could account for up to 13 percent of these sectors' potential GDP contributions in 2030. This reflects that digitally upskilling individuals will be a crucial part of the economic recovery process. Businesses that are quick to digitize and upskill their workforce accordingly – for instance, restaurants that are able to pivot to online ordering and food delivery operations, travel companies that can offer virtual tours, and retail shops that can move to e-commerce platforms – are likely to bounce back more quickly.
- Unlocking Indonesia's digital skill opportunity fully and allowing COVID-hit sectors to fully leverage a digitally skilled workforce for recovery will require firm stakeholder commitment in three key areas.** The Indonesian government is already taking important steps to equip individuals with the skills of tomorrow. Established in 2018, its "Making Indonesia 4.0" strategy sets a strong tone for the government's intention to broaden digital skilling efforts in the country. New curriculums involving robotics and technology are starting to be introduced to schools and vocational training centers, and the government's "Digital Talent Scholarship Program" offers financial support to promising students to broaden their information communications and technology (ICT) learning opportunities. With the COVID-19 pandemic reinforcing the need for digital skills in the economy, the government has also implemented a series of policies to enhance digital skills. Key initiatives include the doubling of government budget allocated to the "pre-employment card" scheme (*Kartu Pra Kerja*) which provides skilling credit to laid-off workers, and the #BanggaBuatanIndonesia campaign (Proudly Made

in Indonesia) which onboarded 10.2 million MSMEs onto digital platforms at the end of 2020. However, for Indonesia to fully unlock the economic potential of digital skills, it is recommended that the country leverages multi-stakeholder partnerships in three key areas:

– ***Equipping the current workforce with digital skills.***

Governments should partner with industry leaders to develop skill frameworks that align with the industry on specific digital skills required in each sector – these frameworks can be used to guide training efforts. Subsidies may also be provided to firms to boost their investment in employee training. In particular, companies, especially MSMEs, could benefit from targeted support from both the government and private sector to address skill gaps.

– ***Preparing the next generation of workers for the digital era.*** The education system needs to be responsive to emerging skillsets of the economy. This involves extending study programs in collaboration with the private sector and incorporating a blend of technical ICT and “soft skills” in national curriculums.

– ***Broadening digital access to all.*** To ensure equitable access to digital skilling opportunities throughout the population, the coverage of existing skills development and training incentive programs could be widened to target underserved communities such as women, youth and rural workers.

Across these areas, Google has made significant contributions to digital upskilling in Indonesia through programs such as “Gapura Digital”, which has trained about 1.8 million small and medium sized businesses (SMBs) on digital marketing tools. In addition, the company has supported Indonesian businesses during the COVID-19 pandemic. As offline businesses struggle to remain profitable and MSME owners face the urgent need to diversify their distribution channels into



online platforms, Google’s programs and products have been instrumental to the survival of many of these entities. For example, Google’s “Women Will” initiative helped women sole breadwinners leverage technologies to reinvent their struggling businesses while introducing Google’s applications that established online business profiles which have become an integral part of new digital business models. A survey found that 98 percent of the participants who attended Google’s digital skilling initiatives (i.e., “Gapura Digital” and “Women Will”) under the “Grow with Google” program have seen an improvement in their digital skills.⁸ Meanwhile, 73 percent of SMBs experienced higher customer engagement and 51 percent reported an increase in revenue or profits.⁹

The report is structured into three chapters. Chapter 1 describes the value of digital skills in Indonesia today. Chapter 2 examines this potential value in 2030, based on the country’s current trends as well as the incremental value that could be unlocked if Indonesia were to accelerate the pace of digital skilling. Chapter 3 highlights the three areas of action that could help close this gap, with examples of relevant programs in the country.

8. Kantar (2020), Google Economic Impact. Available at: https://www.kantar.com.au/Google/Google_Economic_Impact.pdf

9. Kantar (2020), Google Economic Impact. Available at: https://www.kantar.com.au/Google/Google_Economic_Impact.pdf

BOX E1. GOOGLE'S CONTRIBUTIONS

By the end of 2020, Google's digital skills programs in Indonesia will have trained **over 1.8 million small and medium businesses** on a variety of digital skills. These programs address each of the three action areas outlined in this report:

- To equip the current workforce with digital skills, Google's "Gapura Digital" and "Women Will" initiatives have been training about 1.8 million SMBs on digital marketing tools they could use to improve customer outreach.
- To prepare the next generation of workers for the digital skills era, Google through its philanthropic arm, Google.org, provides support to the "Bebras Indonesia" initiative led by the non-governmental organization (NGO), Bebras International, which seeks to cultivate computational thinking skills in K-12 students.
- In broadening digital access to all, among other initiatives, Google's "Women Will" initiative has helped over 550,000 Indonesian women leverage technologies to build their own businesses, as well as inform youths on online safety practices towards a more inclusive and safer online environment.

In addition, Google has been instrumental in supporting over 320,000 business owners weather the COVID-19 crisis through its "Grow with Google" program. Through participating in "Gapura Digital" classes and "Women Will" conferences under this program, these businesses were able to develop sustainable revenue streams on digital platforms. A survey conducted before the pandemic found that 73 percent of SMBs experienced higher customer engagement and 51 percent reported an increase in revenue or profits after attending the "Grow with Google" program.¹⁰ To show support and solidarity with MSMEs, Google has also been providing advertising credits as part of its broader Rp 11.8 trillion (US\$800 million) global commitment for small businesses to remain engaged with their customers.¹¹



Beyond the digital skills agenda, Google's products have also supported substantial economic benefits to Indonesian businesses and consumers. The economic benefits of Google's products in 2019 – which include Google Search, Google Maps, Google Drive, Google Ads, AdSense, and Google Play – are estimated to be worth Rp 185 trillion (US\$12.7 billion) for Indonesian businesses, and over Rp 165 trillion (US\$11.3 billion) for Indonesian consumers. See Appendix A for more details on Google's economic and social contributions in Indonesia.

10. Kantar (2020), Google Economic Impact. Available at: https://www.kantar.com.au/Google/Google_Economic_Impact.pdf

11. Google in Indonesia (2020), "Dari UMKM hingga startup, program terbaru kami dirancang untuk membantu pelaku UMKM bertahan di tengah pandemic." Available at: <https://indonesia.googleblog.com/2020/08/dari-umkm-hingga-startup-program.html>



THE VALUE OF DIGITAL SKILLS IN INDONESIA TODAY

Today, workers with digital skills in the country are estimated to contribute Rp 908 trillion (US\$62.1 billion) or 6 percent of Indonesia's GDP. Contrary to the conventional notion that much of these contributions come from the technology sector, this analysis finds that 73 percent of this value is in fact derived from non-technology sectors with the country's professional services, manufacturing and construction sectors capturing the highest economic benefits from digital skills.



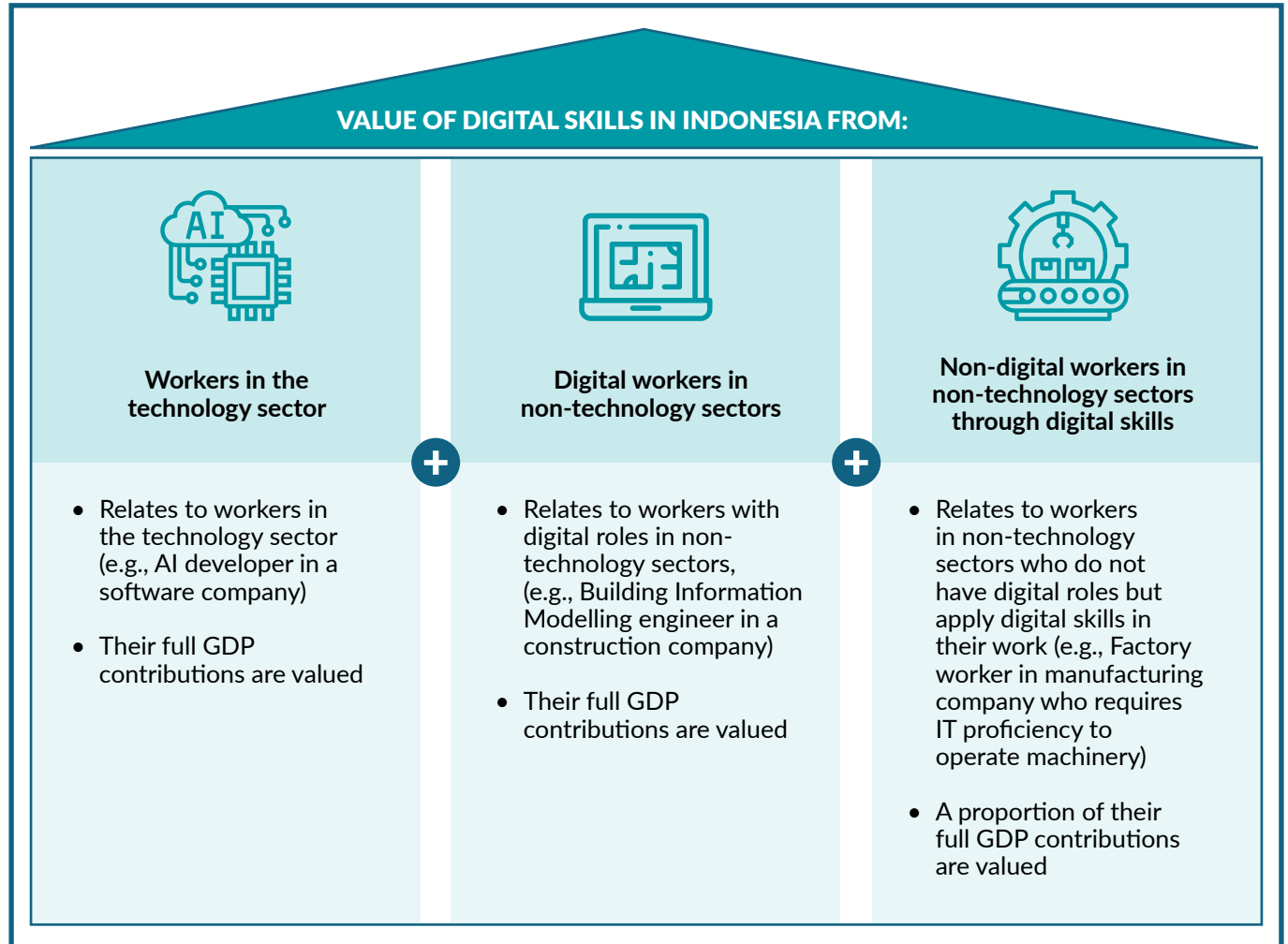
1.1 QUANTIFYING THE ECONOMIC CONTRIBUTIONS OF THE DIGITALLY SKILLED WORKFORCE

This report takes a holistic approach to examining the value of digital skills in Indonesia by considering the relevant GDP contributions from digitally skilled workers both within and outside of the technology sector (see Box 1 for the definition of “digital skills” used in this report). These include (Exhibit 1):

- a. Workers in the technology sector (e.g., AI developers, software developers, cloud engineers in technology or software companies);
- b. Digital workers in non-technology sectors (e.g., Building Information Modelling engineers in construction companies, automation engineers in manufacturing companies); and
- c. Non-digital workers in non-technology sectors who require digital skills to perform their jobs (e.g., factory workers in the manufacturing industry who require some level of IT proficiency to operate machinery).

For the first two categories of workers, their full GDP contributions were considered. Since these workers hold digital roles in their respective sectors, their full economic output may be attributed to their digital skills. For the third category of workers who do not hold digital roles but require digital skills in order to perform part of their jobs, only the share of their GDP contributions that is considered attributable to their digital skills is considered. This share has been identified based on the prevailing wage premium paid to such workers as a result of them possessing digital skills. For full details of how each of these values are sized, please refer to Appendix B.



EXHIBIT 1:**THE VALUE OF DIGITAL SKILLS IN INDONESIA IS ESTIMATED BASED ON THE RELEVANT GDP CONTRIBUTIONS OF THREE TYPES OF WORKERS**

SOURCE: AlphaBeta analysis

BOX 1. DEFINING “DIGITAL SKILLS”

This report utilizes the United Nations Educational, Scientific and Cultural Organization (UNESCO) definition, which defines “digital skills” as “a range of abilities that allow individuals to use digital devices, communications applications, and networks to access and manage information”.¹² UNESCO categorizes digital skills into two groups:

- **Entry-level digital skills** refer to basic functional skills that individuals require to make use of digital devices, basic information processing software and online applications. Such skills are widely considered to be a critical component of skills required in the digital era, alongside traditional reading, writing and numeracy skills.
- **Advanced digital skills** refer to higher-level abilities that allow users to develop and/or deploy digital technologies in transformative ways for their respective organizations. Examples of such technologies and areas of expertise include Artificial Intelligence (AI), machine learning, big data analytics, user interface or experience design, Internet of Things (IoT), and automation and robotics.

While it is critical that individuals complement digital skills with other skills (e.g., literacy, numeracy, critical thinking, interpersonal, socio-emotional and complex problem solving) in order to thrive in the 21st century economy, these complementary skills have not been included in the value estimations for digital skills in this report.



12. United Nations Educational, Scientific and Cultural Organization (2018), “Digital skills critical for jobs and social inclusion.” Available at: <https://en.unesco.org/news/digital-skills-critical-jobs-and-social-inclusion>

1.2 DIGITALLY SKILLED WORKERS CONTRIBUTE RP 908 TRILLION, OR 6% OF INDONESIA'S GDP, TODAY

Digitally skilled workers in Indonesia are estimated to contribute Rp 908 trillion (US\$62.1 billion), or 6 percent of the country's GDP today (Exhibit 2). This is a substantial share that is almost 1.5 times the size of the GDP contribution by the country's financial and insurance services sector in 2018.¹³

direct GDP contribution today is estimated to be Rp 253 trillion (US\$17.3 billion), which accounts for 28 percent of the total digital skills value. Examples of such jobs include software programmers, computer engineers and Internet service providers.

This value comprises:

- GDP contribution from workers in the technology sector.** There are an estimated 447,000 workers in Indonesia's technology sector today. Their
- GDP contribution from digital workers in non-technology sectors.** There are an estimated 1 million digital workers in non-technology sectors in Indonesia today. Their direct GDP contribution is estimated to be Rp 133 trillion (US\$9.1 billion),

EXHIBIT 2:

DIGITALLY SKILLED WORKERS IN INDONESIA ARE ESTIMATED TO CONTRIBUTE RP 908 TRILLION, OR 6 PERCENT OF THE COUNTRY'S GDP, TODAY



SOURCE: AlphaBeta analysis

13. Derived from national statistics on GDP contributions by sector. Source: Badan Pusat Statistik (2020), "Produk domestik bruto". Available at: <https://www.bps.go.id/subject/11/produk-domestik-bruto--lapangan-usaha-.html>



which accounts for 15 percent of Indonesia's total digital skills value. Examples of such jobs include robotic process automation (RPA) engineers in the manufacturing sector and data scientists in the financial services industry.

- **Incremental GDP contribution from digitally skilled workers in non-technology sectors.** At an estimated 27.9 million workers, these workers make up the largest segment of digitally skilled workers in Indonesia. These are workers in non-technology sectors, who, despite not having job titles of a digital nature, require digital skills to perform their jobs. The incremental GDP contribution attributable to their digital skills is estimated to be Rp 522 trillion (US\$35.7 billion) today; in terms of the digital skills value, this is the largest category of the three, accounting for 58 percent of the total digital skills value in the country. Examples of such jobs include accountants who make use of productivity software to enhance the efficiency of their calculations and reporting, and factory technicians who require digital skills to run basic machinery

diagnostics and undertake routine equipment maintenance – particularly as the factories they work in become smarter.¹⁴

Contrary to the conventional notion that workers in the technology sector are likely to account for the majority of the value of economic contributions from digitally skilled workers in the nation, it has been found that almost three-quarters (73 percent) of this value in Indonesia today comes from the non-technology sectors (Exhibit 3).

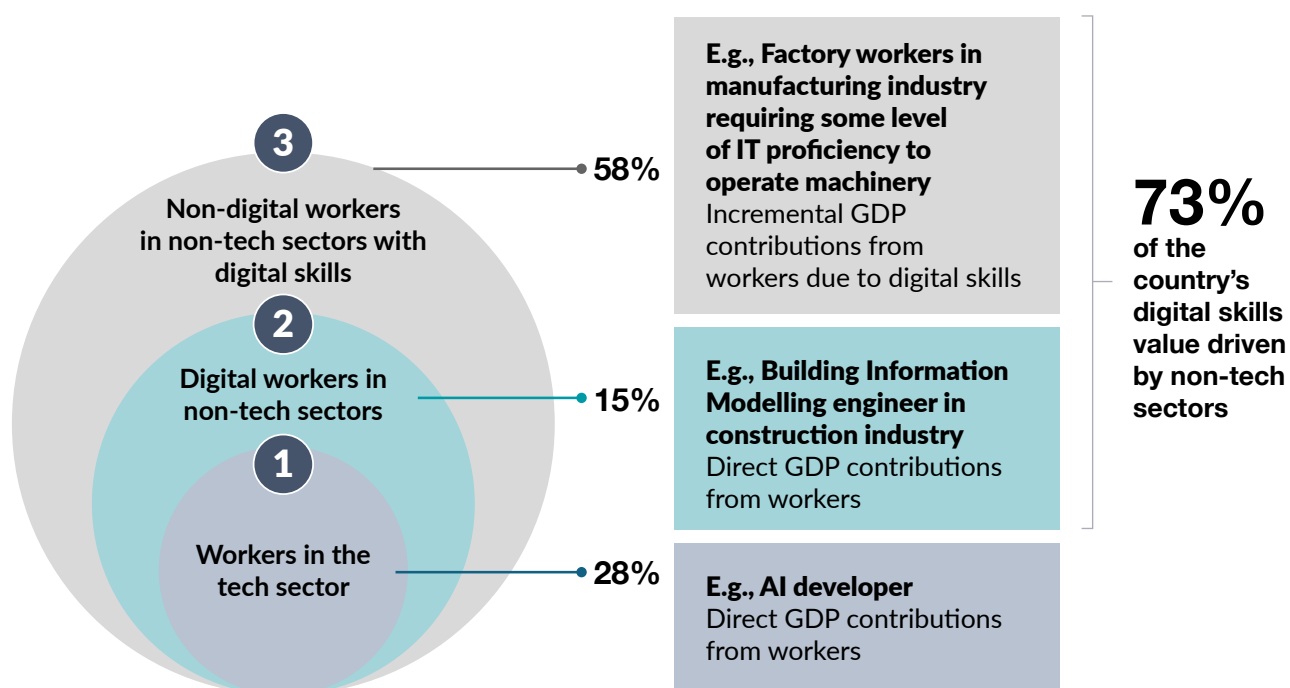
In particular, digital content creation skills constitute a significant element of Indonesia's digital skills value. Individuals who create digital content as a key part of their jobs are estimated to account for about 10 percent of the GDP contributions of all digitally skilled workers in Indonesia. Estimated at about Rp 88.9 trillion (US\$6.3 billion), GDP contributions from content creators in the country are driven largely by web and smartphone application developers, who are estimated to account for over 70 percent of the total value (see Box 2).

14. Burning Glass Technologies (2017), *The digital edge: Middle-skill workers and careers*. Available at: https://www.burning-glass.com/wp-content/uploads/Digital_Edge_report_2017_final.pdf

**EXHIBIT 3:**

TODAY, 73% OF THE TOTAL VALUE OF DIGITAL SKILLS IN INDONESIA COMES FROM WORKERS IN THE NON-TECHNOLOGY SECTORS

VALUE OF DIGITAL SKILLS IN INDONESIA IN 2019 BY WORKER CATEGORY;
%



Note: Figures may not sum due to rounding.

SOURCE: AlphaBeta analysis

BOX 2. THE IMPORTANCE OF DIGITAL CONTENT CREATORS TO INDONESIA'S ECONOMY



Constituting individuals who contribute information to any form of digital media for online end users or audiences, digital content creators in Indonesia - comprising digital marketers, web, app and game developers, and video creators - make significant economic contributions to the economy. Based on local job board data, it is estimated that **full-time content creators in Indonesia contributed about Rp 88.9 trillion (US\$6.1 billion) to the country's GDP in 2019**. Of this value, almost half (47 percent) is driven by web developers, and 27 percent by smartphone application developers, with the remaining 26 percent by game and software developers, digital marketers and other content creators (e.g., digital video creators). A 2018 study additionally showed that video content creators in Indonesia make important contributions to the country's export sector. Such creators such as YouTube influencers, who typically do this freelance or recreationally, supported an estimated Rp 46 billion (US\$3.1 million) in display advertising revenues generated from views from foreign markets in 2017.¹⁵ Given the rapid growth of the digital advertising market in Indonesia and the region, this figure could potentially grow at 17 percent per annum to reach over Rp 497 billion (US\$34 million) in 2030, reflecting the importance of such individuals to Indonesia's economy.¹⁶

15. Hinrich Foundation, Google and AlphaBeta (2019), *The Digital Komodo Dragon: How Indonesia can capture the digital trade opportunity at home and abroad*. Available at: https://www.alphabeta.com/wp-content/uploads/2019/02/digitrade_indo_eng_1-pg-view.pdf

16. Hinrich Foundation, Google and AlphaBeta (2019), *The Digital Komodo Dragon: How Indonesia can capture the digital trade opportunity at home and abroad*. Available at: https://www.alphabeta.com/wp-content/uploads/2019/02/digitrade_indo_eng_1-pg-view.pdf

1.3 THE MOST COVID-RESILIENT SECTORS ARE ALSO THOSE WITH A STRONGER PRESENCE OF A DIGITALLY SKILLED WORKFORCE



Sectors that are more resilient to the COVID-19 pandemic are also those with a stronger presence of a digitally skilled workforce – or larger digital skill values – today. In more COVID-resilient sectors such as the financial services, professional services and media and publishing sectors in which economic impacts have been projected to be least severe,¹⁷ digitally skilled workers are estimated to account for 7 to 11 percent in these sectors' GDP contributions today. On the other hand, in less COVID-resilient sectors such as the hospitality, transport services and retail sectors which are projected to suffer the largest economic impacts in the economy,¹⁸ digitally skilled workers account for lower shares of the sectors' GDP contributions, ranging from 3 percent (in the transport services and hospitality sectors) to 5 percent (in the retail sector). This reflects that workforce digital skills are potentially important in driving business resilience during the pandemic – and potentially in the post-pandemic era.

17. A study by the Asian Development Bank (ADB) in June 2020 of COVID-19's impact to Indonesia economy found that while all sectors will be impacted by the crisis, the financial and professional services, government services, education and healthcare sectors are likely to experience the lowest losses to their GDP contributions, of between 5 and 7 percent. Conversely, sectors that could experience the largest impacts are retail, transport services, and the hospitality and food services sectors. (i.e., less COVID-resilient), of about 7 to 16 percent. See: Asian Development Bank (June 2020), "COVID-19 Economic Impact Assessment Template".

Available at: <https://data.adb.org/dataset/covid-19-economic-impact-assessment-template>

18. A study by the Asian Development Bank (ADB) in June 2020 of COVID-19's impact to Indonesia economy found that while all sectors will be impacted by the crisis, the financial and professional services, government services, education and healthcare sectors are likely to experience the lowest losses to their GDP contributions, of between 5 and 7 percent. Conversely, sectors that could experience the largest impacts are retail, transport services, and the hospitality and food services sectors. (i.e., less COVID-resilient), of about 7 to 16 percent. See: Asian Development Bank (June 2020), "COVID-19 Economic Impact Assessment Template".

Available at: <https://data.adb.org/dataset/covid-19-economic-impact-assessment-template>



**THE DIGITAL
SKILLS PRIZE
IN 2030:
A RP 4,434 TRILLION
GDP OPPORTUNITY**

Based on current digital skilling trends in Indonesia,¹⁹ the value of digital skills in the country is projected to be Rp 1,965 trillion (US\$134.5 billion) in 2030, or 7 percent of forecasted GDP. There is an opportunity for the country to go even further. If Indonesia accelerates its current digital skilling rate to match the performance of global leaders such as the United Kingdom and Netherlands,²⁰ the annual GDP contribution of digitally skilled workers in 2030 could grow by an estimated Rp 2,469 trillion (US\$168.9 billion) to reach Rp 4,434 trillion (US\$303.4 billion) – which is equivalent to approximately 16 percent of the country's forecasted GDP. The share of the digital skills value that comes from non-technology sectors is estimated to remain the dominant component in 2030, with the country's professional services, manufacturing and construction sectors expected to see some of the highest economic contributions from digitally skilled workers.

19. These trends refer to the current share of digital jobs and digitally skilled workers by sector. Refer to Appendix for more details on the methodology.

20. To project the value of digital skills in Indonesia under the "Accelerated" scenario, Indonesia was assumed to match the performance of global leaders. For each of the three categories of workers (technology sector workers; digital workers in non-technology sectors; and non-digital workers with digital skills in non-technology sectors), a country of comparable economic size to Indonesia with the strongest performance in the particular category was selected as the global leader. The selected global leaders in this analysis were the UK for the first (Indonesia was assumed to exhibit the UK's current tech sector share of GDP at 4.9 percent in 2030) and second (Indonesia was assumed to exhibit the UK's historical 5-year growth rate in the number of digital workers at 3 percent per annum between 2019 and 2030) categories, and the Netherlands for the third category (Indonesia was assumed to exhibit the current shares of digitally skilled workers in the Netherlands' non-tech sectors in 2018 - which is 60.7 percent on average). For full details of the methodology, refer to the Appendix.

2.1 AT CURRENT SKILLING RATES, DIGITALLY SKILLED WORKERS WILL CONTRIBUTE RP 1,965 TRILLION TO THE COUNTRY'S GDP IN 2030

Based on current trends in the uptake of digital skills in Indonesia (termed the “Business-as-usual” scenario), the economic contribution of workers with digital skills in Indonesia is projected to grow by 7.3 percent per annum from 2019 to become Rp 1,965 trillion (US\$134.5 billion), or 7 percent of the forecasted GDP in 2030.

This increase is expected to be largely driven by workers in the technology sector and digital workers in the non-technology sector. The associated GDP contributions of both groups of workers are estimated to rise by 212 and 116 percent respectively in the period between 2019 and 2030. On the other hand, the associated GDP contributions of non-digital workers with digital skills in the non-technology sectors are estimated to rise by a relatively lower but still substantial 70 percent (Exhibit 4).

There are three key drivers behind these trends:

- First, Indonesia’s technology sector has been experiencing high growth rates over the past five years, and this growth is expected to continue. A recent report found Indonesia’s Internet economy to be the largest and fastest growing in Southeast Asia, with its Gross Merchandise Value (GMV) quadrupling between 2015 and 2019 at an average growth rate of 49 percent per year.²¹ Accompanying the growth in this sector has been an upward tick in the technology sector’s employment. This analysis has found that the number of workers in this sector has grown by approximately 10 percent per annum between 2012 and 2017, almost six times the average rate of 1.6 percent observed for non-technology sectors over the same period.²²
- Second, with digital technologies becoming increasingly adopted by companies in non-technology sectors, the number of digital workers recruited into these sectors has correspondingly grown. A 2019 report of Indonesia’s labor market similarly reflects an increased demand for digital talent by companies from these sectors. Examples of “in-demand” digital roles include fintech specialists in financial services firms and e-commerce managers in retail companies.²³
- Third, while the employment of digital workers in non-technology sectors has been growing, that of non-digital workers with digital skills has also been increasing – albeit at relatively lower rates. This is consistent with the wider literature which shows that the country’s ability to develop and retain digitally skilled workers is limited in comparison with international leaders. For example, under the “2020 Global Talent Competitiveness Index (GTCI)” which ranks countries based on their ability to grow, attract and retain talent, Indonesia was ranked 84 out of 132 countries on the “Global Knowledge Skills” metric, which has a strong digital skills component.²⁴

21. Although the “Internet economy” in this report extends beyond the technology sector to also cover other sectors such as tourism services (online travel), transport (ride hailing), e-commerce (retail) and financial services (digital financial services), its estimated value and growth is driven in large part by the technology sector. Source: Google and Temasek (2019), e-Economy SEA 2019. Available at: <https://www.temasek.com.sg/en/news-and-views/subscribe/google-temasek-e-economy-sea-2019>

22. Based on AlphaBeta analysis and data from Statistics Indonesia (2019). Available at: <https://www.bps.go.id/subject/6/tenaga-kerja.html#subjekViewTab3>

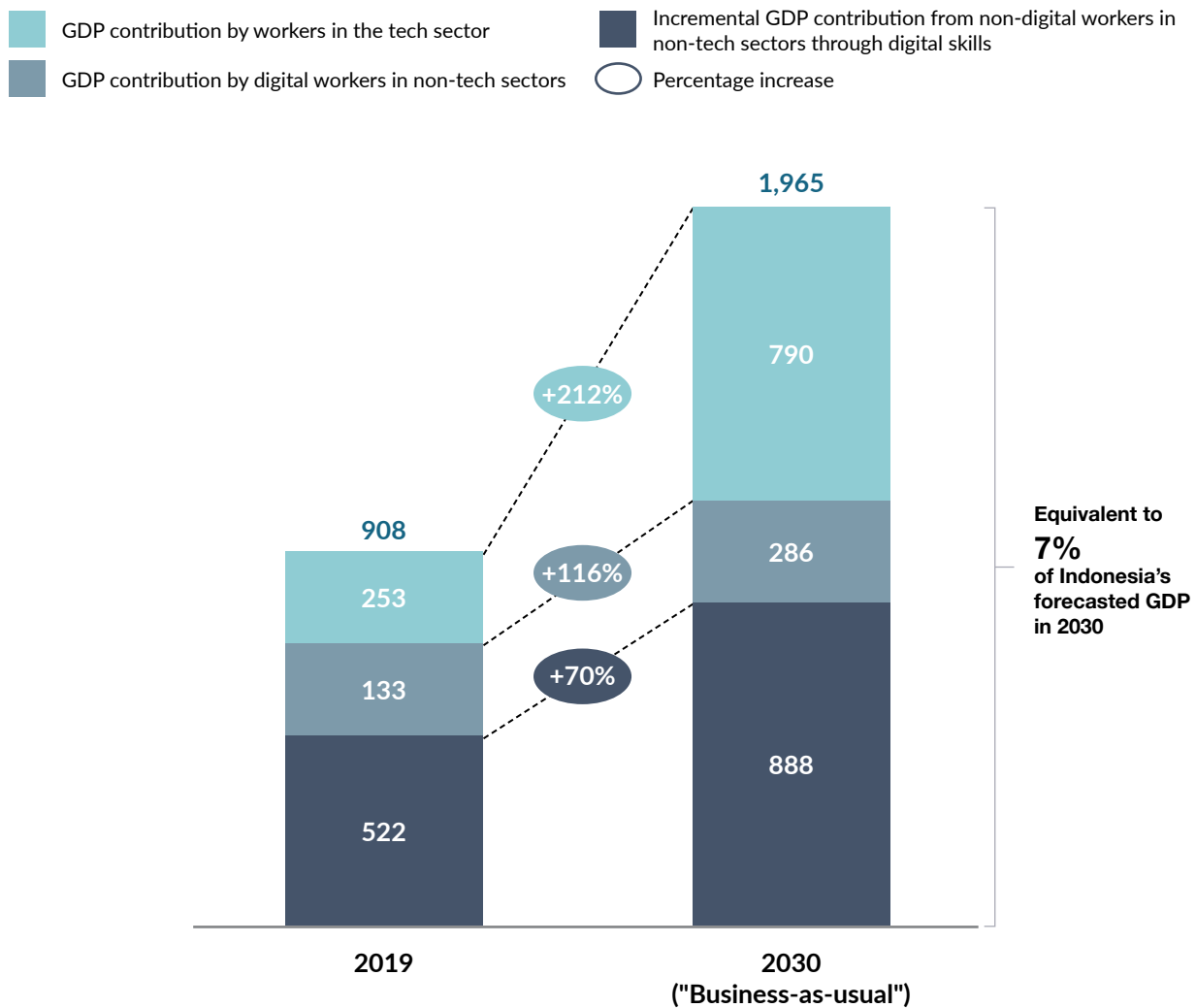
23. Michael Page (2019), Indonesia benchmark salary report 2020. Available at: <https://www.michaelpage.co.id/salary-guide>

24. INSEAD, The Adecco Group and Google (2020), The Global Talent Competitiveness Index 2020: Global talent in the age of Artificial Intelligence. Available at: <https://gtcistudy.com/wp-content/uploads/2020/01/GTCI-2020-Report.pdf>

EXHIBIT 4:

GIVEN CURRENT TRENDS, THE VALUE OF DIGITAL SKILLS IS ESTIMATED TO BE RP 1,965 TRILLION IN 2030 – OR 7 PERCENT OF GDP

GDP CONTRIBUTIONS FROM DIGITALLY SKILLED WORKERS IN INDONESIA BY WORKER CATEGORY, 2019 AND 2030 UNDER THE “BUSINESS-AS-USUAL” SCENARIO (RP, TRILLIONS, %)



SOURCE: AlphaBeta Analysis

2.2 AT AN ACCELERATED RATE OF SKILLING, DIGITALLY SKILLED WORKERS COULD CONTRIBUTE RP 4,434 TRILLION TO THE ECONOMY BY 2030

While the value of digital skills in 2030 estimated based on current trends is already significant, this value could be substantially larger if Indonesia were to accelerate its rate of digital skilling to match the **current** performance of global leaders.²⁵ Under this “Accelerated” scenario, the country’s GDP contribution from digital skills could grow even further at a rate of 16 percent per annum from 2019 to become Rp 4,434 trillion (US\$303.4 billion) in 2030. This is estimated to constitute about 16 percent of the forecasted GDP, which is Rp 2,469 trillion (US\$168.9 billion) or 9 percent of GDP greater than what can be achieved at the current pace of skilling (Exhibit 5).

In the “Accelerated” scenario, the share of GDP contributions from digitally skilled workers coming from the non-technology sectors is expected to remain dominant at 70 percent (Exhibit 6). Of this, 7 percent is accounted for by workers with digital roles, and the remaining 63 percent by workers who do not have digital roles but still require digital skills to perform their jobs.

When broken down by sector, the estimated digital skills value to Indonesia reveals some interesting trends. The country’s technology sector is estimated to account for the largest digital skills value at Rp 1,319 trillion (US\$93.3 billion) in 2030 (Exhibit 7). Given the current nascency of digital skills in the employment base of Indonesia’s non-technology sectors, it is unsurprising

that much of the country’s digital talent could continue to be concentrated in the technology sector.

However, the picture starts to look very different when sectors are ranked based on projected increases in their digital skills values between 2019 and 2030 – with Indonesia’s non-technology sectors expected to see some of the largest increases. This is highest in the professional services sector, in which the relevant GDP contributions from digitally skilled workers in the sector is projected to grow by almost 10 times between 2019 and 2030 (Exhibit 7). Similarly, the digital skills values in the transport and storage, and financial services sectors are forecasted to grow respectively by 8 and 5.5 times – this is larger than the expected growth of this value in the technology sector (at 5.3 times).

Some of the key trends observed in the sectors capturing the largest opportunities include:

- **Professional services.** With the increasing deployment of technologies such as cloud computing and AI by companies in professional services such as accountancy, consultancy and advertising services, employer demand for workers with ICT skillsets has been on the rise. A 2019 review of the recruitment landscape in the sector found that “digital” was one of the most active hiring functions that year.²⁶ Besides specialized

25. To project the value of digital skills in Indonesia under the “Accelerated” scenario, Indonesia was assumed to match the performance of global leaders. For each of the three categories of workers (technology sector workers; digital workers in non-technology sectors; and non-digital workers with digital skills in non-technology sectors), a country of comparable economic size to Indonesia with the strongest performance in the particular category was selected as the global leader. The selected global leaders in this analysis were the UK for the first (Indonesia was assumed to exhibit the UK’s current tech sector share of GDP at 4.9 percent in 2030) and second (Indonesia was assumed to exhibit the UK’s historical 5-year growth rate in the number of digital workers at 3 percent per annum between 2019 and 2030) categories, and the Netherlands for the third category (Indonesia was assumed to exhibit the current shares of digitally skilled workers in the Netherlands’ non-tech sectors in 2018 – which is 60.7 percent on average). For full details of the methodology, refer to the Appendix.

26. Michael Page (2019), Indonesia benchmark salary report 2020. Available at: <https://www.michaelpage.co.id/salary-guide>

digital expertise, a substantial proportion of workers in the sector who are not in digital roles also require digital skills such as knowing how to use word processing software or online search tools in order to improve their productivity at work.

- Manufacturing.** At the heart of the Indonesian government's "Making Indonesia 4.0" strategy which aims to stimulate greater adoption of Industry 4.0 technologies such as AI, the Internet of Things (IoT) and advanced robotics, this sector is projected to see increased demand for digital talent. For example, as part of its Industry 4.0 adoption plan, the automotive manufacturing company PT Toyota Motor Manufacturing Indonesia embarked on a strategy to attract and develop digital capabilities in its workforce.²⁷ These capabilities include data science and architecture, cloud expertise, IoT and cybersecurity.²⁸ Besides these advanced digital capabilities, there is also a strong push by manufacturing companies such as PT Toyota Motor Manufacturing Indonesia to ensure that employees with non-digital roles have an adequate understanding of these technologies in order to deploy them in their daily operations.
- Construction.** This sector has seen a growing interest in digital technologies such as Building Information Modelling (BIM) and construction robots, which have the potential to bring about significant productivity benefits and cost savings. Though still currently limited in quantity, analysis of local job portal data in 2019 found that 0.2 percent of job listings in the sector were for digital roles such as software engineers – primarily recruited to develop and deploy BIM technologies in-house.²⁹ The analysis also revealed that about 23 percent of job listings were for roles that – despite being non-digital in nature – required some level of IT
- Retail.** With the proliferation of digital platforms and technologies that improve sales, marketing and supply chain efficiencies in the retail sector, workers with digital expertise have become increasingly recruited in this sector. A recent report found increased digitization rates to have a major impact on recruiting patterns in the sector, with "digital managers" who are able to utilize e-commerce and social media marketing platforms emerging as one of the most in-demand positions of 2019.³¹ Such platforms are becoming more crucial to access customers in the midst of social distancing restrictions during the COVID-19 pandemic. Beyond online channels, workers on the retail floor are also increasingly expected to know how to operate smart payment systems such as locally popular services like OVO and GoPay to fulfill customer transactions. Box 3 highlights an example of a local MSME in the sector whose employees are trained to leverage technology for greater efficiency.
- Financial services.** With increasing investment in technological solutions such as big data analytics and automated compliance checks, recruitment efforts by Indonesian companies in the financial services sector for IT specialists are increasing. An analysis of the job market in the sector indicated that the proliferation of financial technologies ("fintech") has boosted demand for "fintech specialists" in financial services firms.³² Employers in non-digital positions are also expected to minimally possess entry-level digital skills that would allow them to effectively make use of these emerging technologies.

proficiency.³⁰ Examples include urban planners and engineers who are able to interpret BIM data and computerized city and building plans.

27. Kementerian Perindustrian (2019), "Increasing Automotive Industry Competitiveness through IR 4.0". Available at: http://kemenperin.go.id/unduh_go.php?id=106

28. Kementerian Perindustrian (2019), "Increasing Automotive Industry Competitiveness through IR 4.0". Available at: http://kemenperin.go.id/unduh_go.php?id=106

29. Based on AlphaBeta analysis of local job portal data in 2019. For full details of the methodology on job portal data analysis, see Appendix.

30. Based on AlphaBeta analysis of local job portal data in 2019. For full details of the methodology on job portal data analysis, see Appendix.

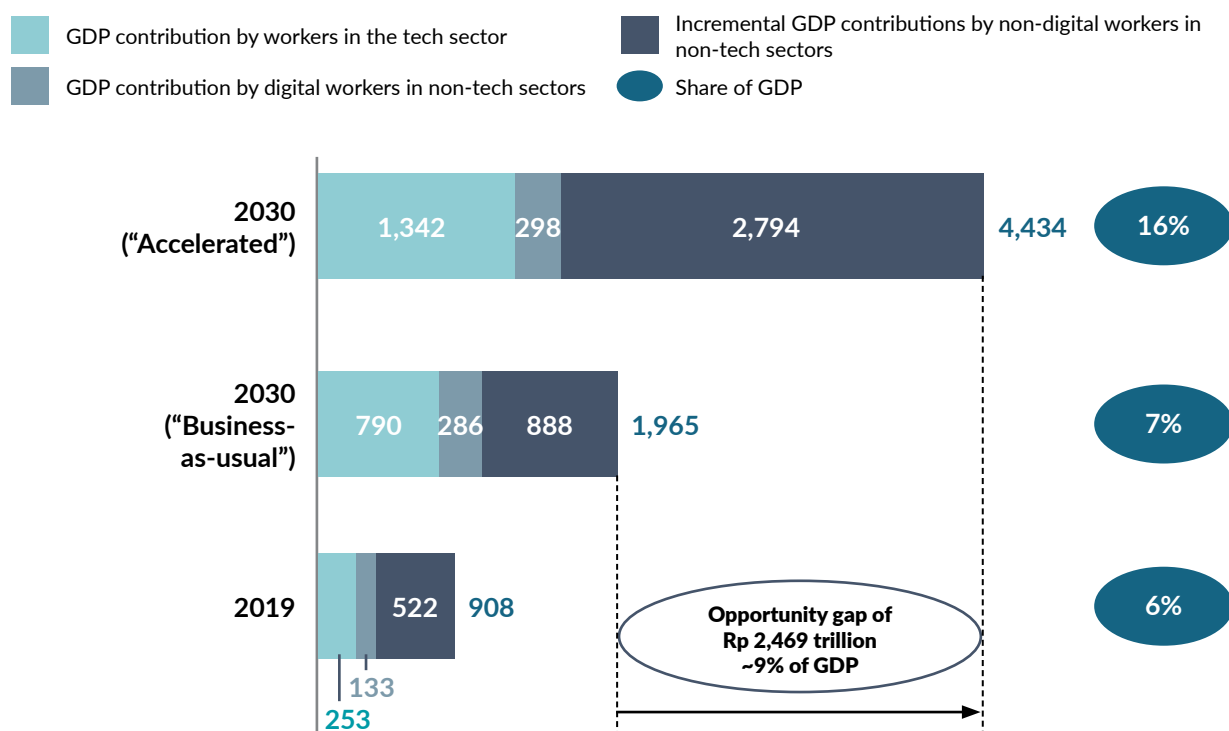
31. Michael Page (2019), Indonesia benchmark salary report 2020. Available at: <https://www.michaelpage.co.id/salary-guide>

32. Michael Page (2019), Indonesia benchmark salary report 2020. Available at: <https://www.michaelpage.co.id/salary-guide>

**EXHIBIT 5:**

IMPROVING INDONESIA'S DIGITAL SKILLS BASE HAS THE POTENTIAL TO DELIVER A GDP IMPACT OF RP 4,434 TRILLION IN 2030, WHICH IS EQUIVALENT TO 16% OF TOTAL GDP

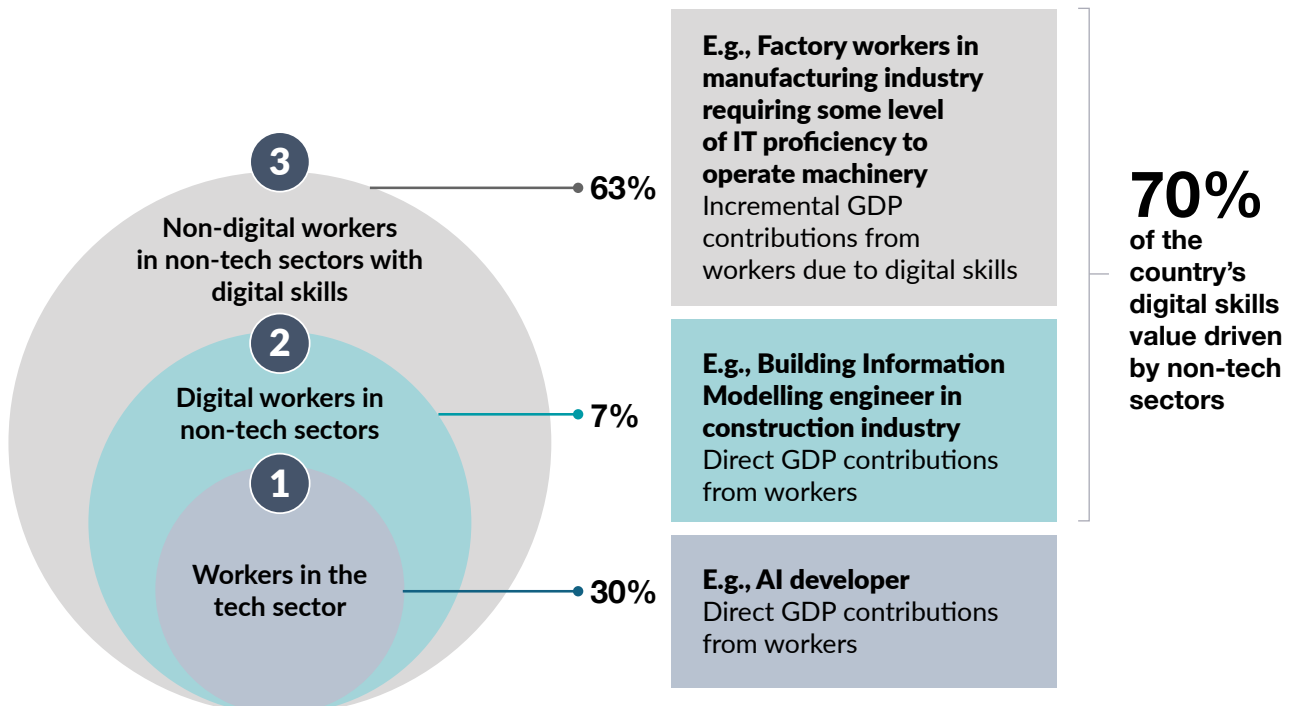
GDP CONTRIBUTIONS FROM DIGITALLY SKILLED WORKERS IN INDONESIA BY WORKER CATEGORY, 2019 AND 2030 UNDER THE "BUSINESS-AS-USUAL" AND "ACCELERATED" SCENARIOS (RP, TRILLIONS, %)



**EXHIBIT 6:**

THE SHARE OF THE DIGITAL SKILLS VALUE ACCOUNTED FOR BY INDONESIA'S NON-TECHNOLOGY SECTORS IS ESTIMATED TO STAY DOMINANT AT 70% IN 2030

VALUE OF DIGITAL SKILLS IN INDONESIA IN 2030 BY WORKER CATEGORY ("ACCELERATED" SCENARIO); %

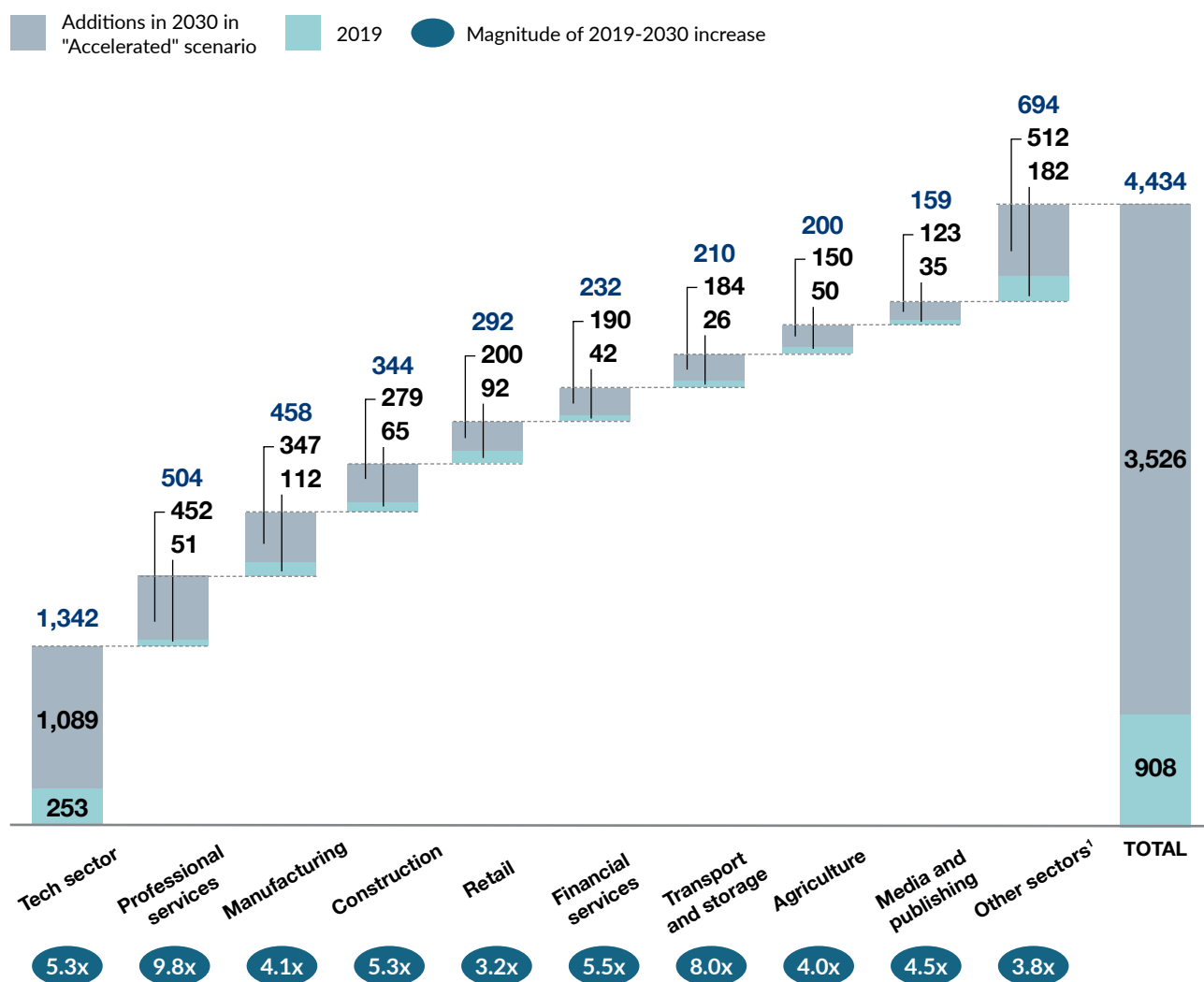


Note: Figures may not sum due to rounding.
SOURCE: AlphaBeta analysis

EXHIBIT 7:

WHILE THE TECH SECTOR IS LIKELY TO ACCOUNT FOR THE HIGHEST DIGITAL SKILLS VALUE, NON-TECH SECTORS COULD SEE THE MOST SIGNIFICANT GROWTH IN THIS VALUE

POTENTIAL ANNUAL GDP CONTRIBUTION FROM DIGITAL SKILLS BY SECTOR, 2019 AND 2030 "ACCELERATED" SCENARIO (RP, TRILLIONS, %)



1. These include: education; hospitality and food services; health and social work; government services; administrative services; mining and utilities.

SOURCE: AlphaBeta analysis

BOX 3.

SUWE ORA JAMU: LEVERAGING DIGITAL SKILLS TO RESTORE A LOCAL TRADITION

Growing up drinking jamu, a traditional Indonesian drink with a variety of uses from treating ailments to boosting energy levels, Nora Mathovani had an idea to restore this fading tradition in a modern way by opening a jamu café, named Suwe Ora Jamu.³³

Nora heavily leverages digital technologies to run her business, and has trained her team to do so as well. All coordination on operations with staff, suppliers and customers are done via digital tools, with order details such as delivery dates and locations digitally tracked and monitored. Her team also uses the Internet to check for new samples and products from suppliers, instead of visiting them in person – resulting in large time savings. Nora and her team also plan to start a YouTube channel and use online videos to demonstrate to others how to make their own jamu.

Backed by a team that is fully adept at leveraging technology to manage the business, Suwe Ora Jamu has seen tremendous success. The company has even opened their second jamu-themed outlet, Pavilion 28, a jamu bar where people can network, collaborate, listen to music, watch films, and enjoy art exhibitions.



Photo Source: <https://www.womenwill.com/indonesia/stories/suwe-ora-jamu.html>

33. Women Will Indonesia (2020), "Suwe Ora Jamu: Keeping the jamu tradition alive". Available at: <https://www.womenwill.com/indonesia/stories/suwe-ora-jamu.html>



2.3 DIGITAL SKILLING EFFORTS WILL BE CRITICAL FOR ECONOMIC RECOVERY FROM THE COVID-19 PANDEMIC

Digital skilling efforts are crucial to tackling the impacts of the pandemic, which has only laid bare the scarcity of digital skills in some segments of Indonesia's society.

One particular segment is the education sector, in which distance learning was mandated during the country's lockdown which started in March 2020 (as schools were not allowed to physically operate). Limited understanding by teachers of how to use online learning platforms led to low rates of student engagement; for instance, teachers would upload lessons and homework on these platforms without providing any feedback on the completed assignments.³⁴ Many have also resorted to distributing weekly paper-based assignments to parents.³⁵

In addition, job seekers in Indonesia increasingly require digital skills to access new job opportunities. With 6.4 million Indonesians who have already lost their jobs due to the pandemic-induced economic recession, and a recent study estimating that Indonesia could see up to 5.8 percent of the overall workforce losing their jobs because of this, the number of job seekers in the economy will likely only rise over the next year.³⁶ At the same time, there is a growing demand for digital skills by prospective employers. Prior to the pandemic, industry surveys had already reflected concerns about the lack of digitally skilled workers in the economy; a recent survey showed that 36 percent of business leaders considered talent and skills shortages to have hampered their efforts in digitizing their business operations.³⁷

34. Kompas (2020), "Mendikbud Singgung Guru yang Hanya Beri Tugas Berat Tanpa Bimbingan."

Available at: <https://nasional.kompas.com/read/2020/03/24/15391751/mendikbud-singgung-guru-yang-hanya-beri-tugas-berat-tanpa-bimbingan>

35. The Jakarta Post (2020), "COVID-19 disruption and the widening digital divide."

Available at: <https://www.thejakartapost.com/academia/2020/05/02/covid-19-disruption-and-the-widening-digital-divide.html>

36. Sources include: Reuters (2020), "Indonesia business chamber says 6.4 million jobs lost so far in pandemic." Available at: <https://www.reuters.com/article/indonesia-economy-unemployment-idUSL4N2DW1P1>; A study by the Asian Development Bank (ADB) in March 2020 of COVID-19's impact to Indonesia economy projected that Indonesia would suffer job losses of up to 5.8 percent of the workforce as a direct result of the pandemic. See: Asian Development Bank (June 2020), "COVID-19 Economic Impact Assessment Template". Available at: <https://data.adb.org/dataset/covid-19-economic-impact-assessment-template>

37. The Jakarta Post (2019), "Lack of talent hampers digital transformation in Indonesia."

Available at: <https://www.thejakartapost.com/news/2019/09/13/lack-of-talent-hampers-digital-transformation-in-indonesia.html>



These concerns are likely to rise during the pandemic, as companies attempt to accelerate their digitization processes to sustain business continuity amidst social distancing restrictions. A recent survey showed that since the pandemic began, 82 percent of Indonesian MSMEs have digitized businesses, up from 41 percent a year ago.³⁸ This has fueled demand for an additional 600,000 talents in the tech sector annually.³⁹

From a lack of digitally trained teachers who are able to cope with distance learning measures imposed during the pandemic, to a shortage of ICT and digital professionals who are able to help companies digitize and sustain business continuity amidst social distancing restrictions, it is crucial that individuals gain new digital skills to address the immediate impacts of the pandemic. Box 4 reflects the digital skills that educators as well as job seekers could benefit from learning.

In the long term, digitally upskilling individuals will be a critical part of long-term economic recovery efforts

in sectors that are likely to be most impacted by the COVID-19 pandemic. In these sectors, digitally skilled workers could account for a sizable share of these sectors' potential GDP contributions in 2030. In the transport services, retail, and hospitality and food services sectors where the pandemic is estimated to have the largest GDP and employment losses,⁴⁰ digitally skilled workers are estimated to account respectively for 13, 11 and 7 percent of the forecasted GDP contributions by these sectors under the "Accelerated" skilling scenario in 2030. Indeed, businesses that are quick to digitize and upskill their workforce accordingly – for instance, restaurants that are able to pivot to online ordering and food delivery operations, travel companies that can offer virtual tours, and retail shops that can move to e-commerce platforms – are likely to bounce back more quickly. Box 5 shows an example of "Dewa Collection Bali", an Indonesian MSME in the retail sector whose business thrived despite the pandemic-induced economic crisis by rapidly pivoting to digital platforms to sell its products.

38. The Jakarta Post (2020), "Digitally mature SMEs could add \$164 billion to GDP: Cisco, IDC."

Available at: <https://www.thejakartapost.com/news/2020/09/11/digitally-mature-smes-could-add-164b-to-gdp-cisco-idc.html>

39. The Jakarta Post (2019), "Ministry offers scholarship program to address digital talent gap."

Available at: <https://www.thejakartapost.com/news/2020/06/16/ministry-offers-scholarship-program-to-address-digital-talent-gap.html>

40. A study by the Asian Development Bank (ADB) in June 2020 of COVID-19's impact to Indonesia economy found that while all sectors will be impacted by the crisis, the financial and professional services, government services, education and healthcare sectors are likely to experience the lowest losses to their GDP contributions, of between 5 and 7 percent. Conversely, sectors that could experience the largest impacts are retail, transport services, and the hospitality and food services sectors. (i.e., less COVID-resilient), of about 7 to 16 percent. See: Asian Development Bank (June 2020), "COVID-19 Economic Impact Assessment Template". Available at: <https://data.adb.org/dataset/covid-19-economic-impact-assessment-template>

BOX 4.

THE DIGITAL SKILLS NEEDED BY EDUCATORS AND JOB SEEKERS TO NAVIGATE THE ECONOMY DURING THE PANDEMIC AND BEYOND

DEVELOPING DIGITAL SKILLS TO SUPPORT DISTANCE LEARNING

While technology could never replace the intangible value brought about by educators, teaching and learning through online channels have become the “new normal” during the COVID-19 pandemic, where temporary closures of schools were mandated in order to curb the spread of the virus. This underscores the need for teachers to constantly upgrade their digital and pedagogical skills to integrate digital devices in instruction. For instance, when using online learning platforms, teachers require basic data literacy and digital communication skills to understand and analyze data on student progress, create and distribute online learning materials, communicate with students, and deliver lessons via digital channels.

UPSKILLING AND RESKILLING JOB SEEKERS IN DIGITAL COMPETENCIES

When work-from-home measures came into effect due to the highly contagious nature of the outbreak, employees were forced to navigate a new office environment using collaboration technologies such as video conferencing, file sharing and instant messaging applications, to remain productive and connected to work teams. For job-seekers to become “remote-ready”, they need to be well versed in both “soft” and technical skills such video conferencing etiquette, able to co-develop ideas on shared documents and be comfortable with digital platforms that have become indispensable in daily workflows.⁴¹

As businesses move more of their operations online, Indonesian MSMEs, which account for more than 60 percent of GDP and employs a majority of the workforce, are fueling the demand for digital talent.⁴² To take on new job opportunities emerging from the pandemic, job-seekers are encouraged to explore new domains such as cybersecurity, AI and robotics which have become a critical aspect for many online businesses. For example, MSMEs which have created their own websites to deliver goods and services online will require their workers to have expertise in protecting vulnerable company assets and consumer data.⁴³



41. The Business Times (2020), “What job seekers need to land their next WFH job.”

Available at: <https://www.businesstimes.com.sg/technology/what-job-seekers-need-to-land-their-next-wfh-job>

42. The Jakarta Post (2020), “Digitally mature SMEs could add \$164b to GDO: Cisco, IDC.”

Available at: <https://www.thejakartapost.com/news/2020/09/11/digitally-mature-smes-could-add-164b-to-gdp-cisco-idc.html>

43. The Jakarta Post (2020), “Govt. partners with Mastercard, NGO to launch business, cybersecurity mentoring for MSMEs.” Available at: <https://www.thejakartapost.com/news/2020/09/04/govt-partners-with-mastercard-ngo-to-launch-business-cybersecurity-mentoring-for-msmes.html>

BOX 5.

DIGITAL SKILLS PROVIDE LIFELINE FOR LOCAL ENTREPRENEUR

In 2017, former office worker Dewanti Amalia Artasari started her online business, “Dewa Collection Bali” on Tokopedia, an online e-commerce marketplace. Having picked up macrame handicraft skills and knowledge of how to list and sell products on e-marketplaces through online videos, she decided to open this small home décor online shop.

After three years of success from selling her products online, Amalia managed to raise sufficient capital to open a brick-and-mortar store in Denpasar, Bali, in January 2020. Unfortunately, operations halted three months later when the COVID-19 pandemic broke out and stocks piled up in the inventory. Despite the significant investment in a physical shop, Amalia realized that the way forward for her business during the pandemic was to revert to digital. She educated herself in digital marketing tools online, and also leveraged technology to secure the production of her goods. Previously, her craftsmen largely resided in Bali. By harnessing digital tools, she managed to reach out to relatives from her hometown and employed a total of thirty craftsmen from other parts of Indonesia to meet the surge in online orders.⁴⁴ She said, “I’m happy when I see people in my village are working. It is a pandemic but people are still productive. I have a lot of orders and I want to have an impact on my surrounding.”⁴⁵

Amalia’s business experienced a 400 percent increase in sales during the pandemic after exploiting the online marketplace and social media platforms that expanded her reach throughout Indonesia.⁴⁶



44. Tokopedia (2020), “Rayakan Semangat Baru Bersama Seller Inspiratif Tokopedia.”

Available at: <https://www.tokopedia.com/blog/rayakan-semangat-baru-bersama-seller-inspiratif-tokopedia/>

45. The Jakarta Post (2020), “E-commerce brings in new entrepreneurs, expands market access in times of crisis.” Available at: <https://www.thejakartapost.com/news/2020/07/16/e-commerce-brings-in-new-entrepreneurs-expands-market-access-in-times-of-crisis.html>

46. The Jakarta Post (2020), “E-commerce brings in new entrepreneurs, expands market access in times of crisis.” Available at: <https://www.thejakartapost.com/news/2020/07/16/e-commerce-brings-in-new-entrepreneurs-expands-market-access-in-times-of-crisis.html>



**THREE AREAS
OF ACTION WILL
BE NEEDED TO
FULLY UNLOCK
INDONESIA'S DIGITAL
SKILLS OPPORTUNITY**

The Indonesian government is already taking important steps to equip individuals with the skills of tomorrow. Established in 2018, its “Making Indonesia 4.0” strategy sets a strong tone for the government’s intention to broaden digital skilling efforts in the country. New curriculums involving robotics and technology are starting to be introduced to schools and vocational training centers, and the government’s “Digital Talent Scholarship Program” offers financial support to promising students to broaden their ICT learning opportunities. With the COVID-19 pandemic further reinforcing the need for digital skills in the economy, the government has also implemented a series of policy actions to reinforce these efforts. Key initiatives include the doubling of government budget allocated to the “pre-employment card” scheme (*Kartu Pra Kerja*) which provides skilling credit to laid-off workers, and the #BanggaBuatanIndonesia campaign (Proudly Made in Indonesia) onboarded 10.2 million MSMEs onto digital platforms at the end of 2020.



However, for Indonesia to fully unlock the economic potential of digital skills, it is recommended that the country leverages multi-stakeholder partnerships in three key areas. Firstly, to equip the current workforce with digital skills, governments should partner with industry leaders to develop skill frameworks to guide digital skill training efforts in each sector. Subsidies may also be provided to firms to boost their investment in employee training. Secondly, to prepare the next generation of workers for the digital era, the education system needs to be responsive to emerging skillsets of the economy. This involves extending study programs in collaboration with the private sector and incorporating a blend of technical ICT and “soft skills” in national curriculums. Thirdly, equitable access to digital skilling opportunities should be ensured by expanding the coverage of existing skills development and training incentive programs could be widened to target underserved communities such as women, youth and rural workers.

Across these areas, Google has made significant contributions to digital upskilling in Indonesia through programs such as “Gapura Digital” (which trains MSME owners on digital marketing tools), “Bangkit” (which seeks to develop the country’s developer talent pool), and “Let’s Go, Smart Internet!” (which educates youth on online safety and etiquette).

3.1 ACTION AREA 1: EQUIP THE CURRENT WORKFORCE WITH DIGITAL SKILLS

To fully leverage the economic opportunities afforded by digital technologies for the Indonesian economy, it is critical to ensure that Indonesia’s current workers are provided with the right support to access the requisite training in digital skills. These include both advanced digital skills such as software engineering and user experience (UX) design skills for software developers, and basic digital skills such as the use of productivity software, web browsers and other simple digital interfaces – particularly for MSME owners and employees.

Indonesia is facing challenges in this regard. The country fares poorly on international studies benchmarking

countries’ competitiveness in digital skills – Indonesia was ranked 41st out of 63 countries on the “digital skills” metric in the “IMD World Digital Competitiveness Ranking 2019”, and 52nd out of 141 countries on the “digital skills among active population” metric in the World Economic Forum’s 2019 “Global Competitiveness Index”.⁴⁷ The World Bank has additionally estimated that the country faces a shortage of 9 million skilled and semi-skilled information and communications technology (ICT) workers between 2015 and 2030.⁴⁸ Digital skills deemed to be in shortage in the country include a combination of “hard” and “soft” skills. A recent survey of 112 business leaders in the country, for example, reflected that programming and data analysis skills,

47. Sources include: World Economic Forum (2019), *Global Competitiveness Index*. Available at: http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf; IMD (2019), *IMD World Competitiveness Center Rankings*. Available at: <https://www.imd.org/wcc/world-competitiveness-center-rankings/world-digital-competitiveness-rankings-2019/>

48. World Bank (2018), *Preparing ICT Skills for Digital Economy: Indonesia within the ASEAN context*.

Available at: https://blogs.worldbank.org/sites/default/files/preparing_ict_skills_for_digital_economy-revised_7mar2018.pdf

as well as initiative-taking, adaptability and creativity traits will become important for workers to leverage technology at work.⁴⁹

However, initiatives by the government to address the digital skills gap are emerging. For example, tax incentives of up to 300 percent for companies that conduct research and development (R&D) programs were recently announced in 2019 by the Ministry of Finance.⁵⁰ As part of the national response package to the COVID-19 pandemic, the Ministry of Manpower (MOM) has doubled budget allocation for “pre-employment card” (*Kartu Pra Kerja*) to Rp 20 trillion to support 5.6 million laid-off workers, informal workers and MSME owners.⁵¹ These cards contain credit that could be spent on courses to augment or refresh their skills.⁵² The MOM has emphasized that this will form a key part of their “three-part” skilling strategy: “skilling” (equipping graduates who are unable to seek employment work-ready skills), “re-skilling” (improving the employability of long-term unemployed workers) and “up-skilling” (enhancing the career options of temporarily unemployed workers).⁵³ As part of the country’s “Making Indonesia 4.0” strategy, the Ministry of Industry developed a list of Industry 4.0 training courses for industry, government officials and vocational teachers; however, given that this is a pilot program, the delivery of these courses has yet to be scaled up nationwide.⁵⁴

With the severe economic impact of COVID-19, the government has also stepped up efforts to equip MSMEs and their workers with the digital skills needed to weather the crisis. As part of the #BanggaBuatanIndonesia (Proudly Made in Indonesia) campaign launched by President Joko Widodo, the



government will be providing a range of training and skill improvement programs conducted by digital marketing experts to assist with sales on online marketplaces.⁵⁵ In addition, the government disbursed Rp 34.1 trillion (US\$2.2 billion) in grants for MSMEs to develop their brand and online presence.⁵⁶ By end of 2020, 10.2 million MSMEs have gone digital by using online platforms.⁵⁷

49. Microsoft-IDC (2019), Microsoft – IDC Study: Artificial Intelligence to nearly double the rate of innovation in Asia Pacific by 2021.

Available at: <https://news.microsoft.com/apac/2019/02/20/microsoft-idc-study-artificial-intelligence-to-nearly-double-the-rate-of-innovation-in-asia-pacific-by-2021/>

50. The Jakarta Post (2019), “Jokowi issues rule on tax deductions of up to 300% of R&D cost”.

Available at: <https://www.thejakartapost.com/news/2019/07/09/jokowi-issues-regulation-on-tax-deductions-up-to-300-percent.html>

51. International Labour Organization (2020), Country policy responses - Indonesia.

Available at: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_747090.pdf

52. Kompas (2019), “Jokowi: Insentif Kartu Pra Kerja bukan berarti gaji untuk pengangguran”.

Available at: <https://nasional.kompas.com/read/2019/03/10/21305071/jokowi-insentif-kartu-pra-kerja-bukan-berarti-gaji-untuk-pengangguran>

53. Based on consultation with the Ministry of Manpower in July 2019.

54. Based on consultation with the Ministry of Industry in July 2019.

55. Independent Observer (2020), “The Ministry of Cooperatives and Small and Medium Enterprises launches KAU to accelerate UMKM Go Marketplace.”

Available at: <https://observerid.com/the-ministry-of-cooperatives-and-small-and-medium-enterprises-launches-kau-to-accelerate-umkm-go-marketplace/>

56. Jakarta Globe (2020), “New Gov’t Campaign Encourages SMEs to Ramp Up Digital Presence.”

Available at: <https://jakartaglobe.id/news/new-govt-campaign-encourages-smes-to-ramp-up-digital-presence/>

57. The Jakarta Post (2020), “10 million SMEs go digital amid pandemic.”

Available at: <https://www.thejakartapost.com/paper/2020/11/09/10-million-smes-go-digital-amid-pandemic.html>

There are three recommendations for going further to upskill Indonesia's workforce. First, to manage the immediate impact of the COVID-19 pandemic in the short term, it is important that laid-off individuals and owners of battered MSMEs receive adequate access to digital skills training. In Australia, the Ministry for Employment, Skills, Small and Family Business established the "Higher Education Relief Package" in April 2020 which subsidizes short online courses developed by Australian universities and private training providers for workers to be re-employed in nationally prioritized sectors such as health, science and information technology (IT).⁵⁸ Private sector players such as Google are also playing a prominent role to help MSME owners in COVID-hit sectors recover through support for digital adoption and training. Under the "Grow with Google" program which aims to impart digital skills to individuals, Google recently launched a playbook and webinar series to teach businesses in managing digital storefronts. In tandem with skills training, "Google Shopping", a platform for shoppers to discover and compare online products, also provided free listings and ads to retailers which increased their exposure to millions of shoppers visiting the site to fulfil daily shopping needs.⁵⁹

Second, in the medium term, the government could explore working with the industry to identify more effective and enforceable mechanisms through which financial incentives could be provided for Indonesian employers to train their employees in digital skills. While attractive, tax incentives for training can be difficult to enforce, and the administrative processes required to prove training expenditures can prove to

be burdensome for both government administrators and the beneficiary companies. An effective practice observed in the region is the Singapore government's employer-based training funding program, a direct subsidy provided to employers for training for their employees. Under this program, up to 95 percent of course fees and absentee payroll salary costs are subsidized, with higher incentives being awarded for courses that have attained professional qualifications, as well as for companies below a certain size (i.e., smaller firms receive proportionally larger support).⁶⁰ With all subsidy-eligible courses registerable only through an established network of "Continuing Education and Training" (CET) centers, fund disbursements can be easily administered.⁶¹

Third, in the long term, to ensure that workers receive continual support from their employers in digital upskilling, emphasis needs to be placed on providing Indonesian companies (particularly MSMEs) with the support to upskill their workers digitally. As illustrated in Chapter 1, with the bulk of digital skills value projected to come from workers in these sectors and given the prevalence of MSMEs in Indonesia's economic landscape, it is important for the government to work with industry to develop targeted support for these entities. An international best practice worth considering in Indonesia is Sweden's "Digilyft Kickstart" program, which was established through a public-private partnership to enhance the use of digital technology by MSMEs in the manufacturing sector (Box 6). This program could build upon Indonesia's existing skills strategy for the country's manufacturing industry under the "Making Indonesia 4.0" policy.

58. Australian Government (2020), "Higher Education Relief Package". Available at: <https://www.studyassist.gov.au/news/higher-education-relief-package#:~:text=The%20Higher%20Education%20Relief%20Package%20will%20reduce%20the%20cost%20of,the%20short%20courses%20for%20May>.

59. Scott Beaumont (2020), "Help for retailers and shoppers in Asia Pacific." Available at: <https://blog-google.cdn.ampproject.org/c/s/blog.google/around-the-globe/google-asia/apac-free-listings/amp/>

60. Skillsfuture SG (2019), "Funding support for employers". Available at: <https://www.ssg.gov.sg/programmes-and-initiatives/funding/funding-for-employer-based-training.html>

61. Skillsfuture SG (2019), "Funding support for employers". Available at: <https://www.ssg.gov.sg/programmes-and-initiatives/funding/funding-for-employer-based-training.html>

BOX 6: SWEDEN'S "DIGILYFT KICKSTART" PROGRAM: HELPING MSMEs IN THE MANUFACTURING SECTOR GAIN DIGITAL SKILLS

To increase the use of digital technology among MSMEs and their workers in Sweden's manufacturing industry, the Swedish Agency for Economic and Regional Growth (Tillväxtverket) developed the "Digilyft Kickstart" program in partnership with industry bodies such as "The Association of Swedish Engineering Industries" (Teknikföretagen).⁶²

Recognizing that industrial and industrial service MSMEs are among the least digitized firms in the country and often lack the time and resources to develop a digital transformation strategy, this program involves the delivery of "Kickstart" workshops over a number of days to change managers and executives in such firms.⁶³ In these free-to-attend workshops, MSME change managers are educated about the opportunities afforded by digitization - largely in business development processes and business systems.⁶⁴ Facilitators from hailing from both industry and government work directly with them to develop plans for incorporating digital technologies into their businesses. These include opportunities in marketing, sales, customer support and administration. External resources such as funding and training in specific digital skills are also shared with MSME change managers. For example, vouchers are provided to firms in the workshops that propose a project that makes innovative and strategic use of digital technology - such a voucher can subsidize up to 50 percent of the total project value within a limit of €25,000 (US\$26,700).⁶⁵ Firms can spend these funds on either information technology-related equipment or services. To minimize the time burden for MSME change managers, the workshops span only one full day and two half-days.

The workshops are highly curated, with the content of each being tailored to include examples and opportunities that are relevant to the specific mix of companies in the workshop. To maximize the potential for collaboration, companies with similar or complementary business activities are also placed in the same workshop sessions.

Originally started as a pilot that ran from 2016 to 2017, its success led to an eventual scale-up into a larger-scale initiative in 2018, with €2 million (US\$2,135,100) funded by the Swedish Agency with the aim of supporting over 1,000 companies that year.⁶⁶

62. Nesta and Readie (2018), *Delivering digital skills: a guide for preparing the workforce for an inclusive digital economy*. Available at: https://media.nesta.org.uk/documents/Readie_Digital_Skills_booklet_online.pdf

63. Region Västerbotten (2020), "Digilyft Västerbotten".

Available at: <https://regionvasterbotten.se/naringsliv-och-samhallsbyggnad/regional-digitalisering/digilyft-vasterbotten>

64. Region Västerbotten (2020), "Digilyft Västerbotten".

Available at: <https://regionvasterbotten.se/naringsliv-och-samhallsbyggnad/regional-digitalisering/digilyft-vasterbotten>

65. OECD (2018), *OECD reviews of digital transformation: Going digital in Sweden*, OECD Publishing, Paris.

Available at: <http://dx.doi.org/10.1787/97892264302259-en>

66. Nesta and Readie (2018), *Delivering digital skills: a guide for preparing the workforce for an inclusive digital economy*.

Available at: https://media.nesta.org.uk/documents/Readie_Digital_Skills_booklet_online.pdf



3.2 ACTION AREA 2: PREPARE THE NEXT GENERATION OF WORKERS

It is critical that the seeds for a future generation of adaptable and digitally skilled workers are planted early. This includes developing an agile education system that is responsive to the changing technological landscape, as well as an ecosystem of programs aimed at digitally skilling graduates before they enter the workforce.

The Indonesian government is already making significant efforts in this regard. To support schools in preparing their students for the new digital era, the government allocated 20 percent of its state budget in 2019 – worth about Rp 495 trillion (US\$35.4 billion) – to education. These funds will be used to teach soft skills, train new teachers and simplify curriculums.⁶⁷ A key government initiative is the Ministry of Communication and Information Technology's "Digital Talent Scholarship Online Academy". To accelerate the digitalization of MSMEs amid the COVID-19 pandemic, the academy provides financial support and capacity-building programs focused on equipping online entrepreneurs with core digital competencies, such as cloud computing,

network engineering, chatbot programming and digital marketing. This initiative aims to train a total of 35,000 participants from various segments of the population including fresh graduates, vocational graduates and coding teachers.⁶⁸ Tax incentives have also been introduced (albeit yet enforced) to incentivize student apprenticeships and R&D efforts by companies.⁶⁹

To increase the responsiveness of curriculums to emerging technologies deployed in industry, the Ministry of Manpower is also undertaking a significant effort to "fast-track" the approval process for curriculum changes in vocational training centers where a significant number of youth are trained in before transiting into their first jobs.⁷⁰ In January 2020, the Ministry of Education and Culture launched "Independent Campus, Free Learning" (*Kampus Merdeka, Merdeka Belajar*), a policy for universities to collaborate with industry to create new study programs to ensure that tertiary curriculums reflect industry needs.⁷¹

67. The Jakarta Post (2019), "Education institutions told to develop human resources for Industry 4.0."

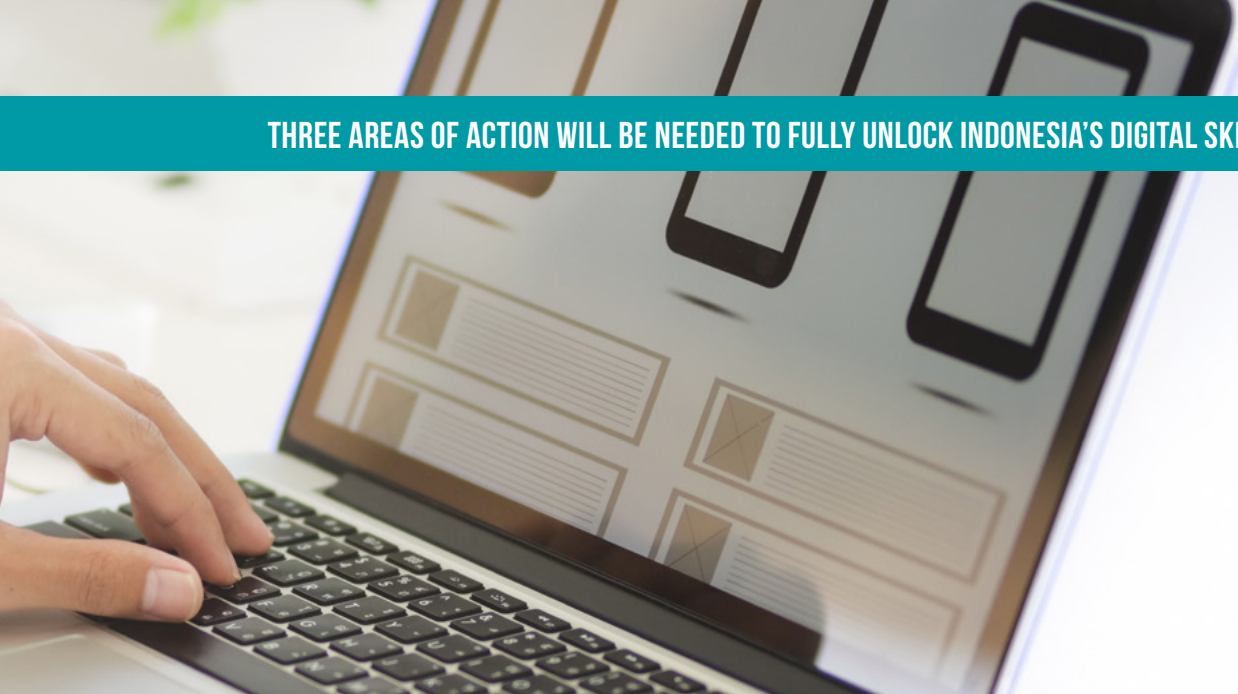
Available at: <https://www.thejakartapost.com/news/2019/02/08/education-institutions-told-to-develop-human-resources-for-industry-4-0.html>

68. Organisation for Economic Co-operation and Development (2020), Policy options to support digitalization of business models during COVID-19: Annex. Available at: <https://www.oecd.org/sti/policy-options-to-support-digitalization-of-business-models-during-covid-19-annex.pdf>

69. Based on consultation with the Ministry of Industry in July 2019.

70. Sources include: The Jakarta Post (2016), "Five plans to upskill Indonesia's workforce." Available at: <https://www.thejakartapost.com/adv/2016/05/04/five-plans-to-upskill-indonesias-workforce.html>; TVET Platform for SEA (2019). Available at: <https://sea-vet.net/indonesia>

71. Universitas Negeri Padang (2020), "Merdeka Belajar Merdeka Kampus". Available at: <http://www.unp.ac.id/id/akademik/merdeka-belajar-kampus-merdeka>



However, with there being more than three million teachers and 50 million students in the K-12 education levels across the country, ensuring that all schools and teachers are ready for the new digital era is a challenge.⁷² There is thus scope for public and private sector programs to be further scaled up to become public-private partnerships that deliver education reforms at a national level. An example is the introduction of computer programming as a mandatory subject in Japan's elementary schools from 2020; this new curriculum was structured with the support of technology companies in the country.⁷³ To expose and enthuse K-12 students in computational thinking, the Singapore government also partnered extensively with technology training partners to propose content for courses under the government's "Code for Fun" enrichment program – which is offered to all primary and secondary schools in the country.⁷⁴

At the same time, it is important that educators are trained in the necessary digital skills and ICT knowhow in order to teach their students such skills effectively. In addition, as evidenced in Chapter 2 which reflected that the shortage of digital skills in educators has

led to severe gaps in the delivery of lessons during the country's COVID-19 lockdown, it is crucial that educators gain access to these skills. The Ministry of Education of South Korea has launched an online website – "School-On" where teachers were given training on how to use online learning platforms and tools such as Zoom and YouTube.⁷⁵ A similar initiative can be rolled out in Indonesia's schools.

Further, to ensure that students are trained in the "soft skills" that will become even more important as technologies displace physical and routine work, it is recommended that such skills become a stronger focus in national curriculums. An example of an education system that has done this to great effect is Finland's, which introduced in 2017 the concept of "phenomenon-based teaching and learning" (PBL) to school curriculums. Intended to equip students with critical thinking skills, PBL lessons are a shift away from learning in "silos" towards multidisciplinary learning where students learn about world topics (e.g., climate change) in a holistic manner. They are even involved in planning these lessons and assessing what they learn from them.⁷⁶

72. The Jakarta Post (2020), "Shining light on tech-friendly teachers".

Available at: <https://www.thejakartapost.com/youth/2018/03/19/shining-light-on-tech-friendly-teachers.html>

73. Information shared by Microsoft on the company's 'Digital Skills' program.

74. Sources include: Peter Seow, Chee-Kit Looi, Meng-Leong How, Bimlesh Wadhwa, Long-Kai Wu (2019), Educational policy and implementation of computational thinking and programming: case study of Singapore. Available at: https://link.springer.com/chapter/10.1007/978-981-13-6528-7_19; IMDA (2020), "Code For Fun". Available at: <https://codesg.imda.gov.sg/in-schools/code-for-fun/overview/>

75. Korea Education and Research Information Service (2020). COVID-19 Response by South Korea and KERIS.

Available at: https://portal.portaledu.co.kr/sites/default/files/COVID19_Korean%20Response_KERIS.docx.pdf

76. Sources include: World Economic Forum (2017), "Is this Finnish school the perfect design?" Available at: <https://www.weforum.org/agenda/2017/10/why-finland-is-tearing-down-walls-in-schools>; David Tay (2017), "Finn and fun: lessons from Finland's new school curriculum". The Straits Times. Available at: <https://www.straitstimes.com/singapore/education/finn-fun>

3.3 ACTION AREA 3: BROADEN DIGITAL ACCESS TO ALL

Last but not least, it is critical to ensure access to digital skilling opportunities for all. This involves the development of targeted programs tailored to the needs of specific underserved groups and regions in the country to enhance their employability and ability to benefit from digital skills. This is particularly important in Indonesia, where labor market outcomes have been traditionally much poorer for women, youth and rural workers.⁷⁷ For example, in 2017, only 50 percent of working-age Indonesian women were employed in formal jobs as compared to 83 percent of working-age Indonesian men, and a rural worker in the country earns, on average, 30 percent less per month than an urban worker.⁷⁸

The government is closely working with industry and civil society actors to improve the inclusiveness of underserved communities in the workforce. The “Digital Talent Scholarship Program 2019” developed by the Ministry of Communication and Information Technology, as mentioned in Action Area 2, has a strong focus on training fresh graduates with disabilities. It also has a dedicated training program – “Online Academy” – which the general public may access to gain new digital skills.⁷⁹ The Ministry of Education and Culture, for example, implemented the “Open Distance Learning” program to improve access to education for Indonesians in rural and remote areas.⁸⁰

While these efforts are crucial to building the momentum needed to extend the benefits of technologies to all, they currently take place at limited scale and tend to target only specific geographic communities. There is thus room for policy mechanisms at the national level to ensure fair access to skilling opportunities across the



country. Possible approaches include providing access to online learning channels; developing targeted skills development programs for specific underserved groups; and providing financial incentives for employers to train specific vulnerable groups of workers. The United Kingdom’s “Future Digital Inclusion” program provides a good example of a program that targets vulnerable communities to provide basic digital skilling training (see Box 7).

77. Asian Development Bank and OECD (2015), *Education In Indonesia: Rising to the challenge*. Available at: <http://dx.doi.org/10.1787/9789264230750-en>

78. Badan Pusat Statistik (BPS). Available at: <https://www.bps.go.id/>

79. KOMINFO (2020), “Digital talent scholarship.” Available at: <https://digitalent.kominfo.go.id/about>

80. Lee Kuan Yew School of Public Policy and Microsoft (2016), *Technical and Vocational Education and Training in Indonesia: Challenges and Opportunities for the Future*. Available at: https://lkyspp.nus.edu.sg/docs/default-source/case-studies/lkysppms_case_study_technical_and_vocational_education_and_training_in_indonesia.pdf?sfvrsn=e5c5960b_2

BOX 7: “FUTURE DIGITAL INCLUSION” — DIGITAL SKILLS TRAINING FOR UNDERSERVED COMMUNITIES

The “Future Digital Inclusion” program was launched in 2014 by the UK government and the Good Things Foundation, an independent charity. The goal of this program is to help one million digitally excluded people in the country to develop an adequate level of digital literacy to improve their lives through employment and accreditation. These groups include people who are still learning English, retirees, the unemployed and people with low or no qualification.⁸¹

The program leverages the Good Things Foundation’s network of 5,000 online centers to provide courses to these excluded groups. There is a wide range of programs available for learners, ranging from basic digital literacy skills (e.g., knowing how to use a computer or a device) through to making online transactions (e.g., online banking and shopping).⁸² These courses are delivered primarily through the foundation’s digital platform, “Learn My Way”, which contains over 30 courses on basic digital skills. A key differentiation between “Future Digital Inclusion” and other similar programs is the customizability of the training and the close interaction between the learners and the trainers. Learners receive personalized one-to-one support that helps to improve learning outcomes and promote confidence to use new digital technologies.

Since its inception in 2014, over 1.3 million people have benefited from the program. More significantly, it has paved the way for more digital upskilling opportunities for learners, with 87 percent of learners having gone on to apply their newfound digital skills to obtain professional qualifications, pursue more advanced digital courses or undertake self-guided learning.⁸³ On the employment front, 73 percent of working-age learners reported that their job prospects have improved as a result of the program.⁸⁴



Photo Source: <https://www.goodthingsfoundation.org/news-and-blogs/blog/good-things-foundation-european-conference-information-literacy>

81. Good Things Foundation (2019), Future Digital Inclusion: Delivering basic digital skills for those in need.

Available at: https://www.goodthingsfoundation.org/sites/default/files/research-publications/realist_evaluation_v2.pdf

82. Good Things Foundation (2019), Future Digital Inclusion: Delivering basic digital skills for those in need.

Available at: https://www.goodthingsfoundation.org/sites/default/files/research-publications/realist_evaluation_v2.pdf

83. Good Things Foundation (2019), Future Digital Inclusion: Delivering basic digital skills for those in need.

Available at: https://www.goodthingsfoundation.org/sites/default/files/research-publications/realist_evaluation_v2.pdf

84. Good Things Foundation (2019), Future Digital Inclusion: Delivering basic digital skills for those in need.

Available at: https://www.goodthingsfoundation.org/sites/default/files/research-publications/realist_evaluation_v2.pdf

3.4 GOOGLE'S CONTRIBUTIONS TO BUILDING DIGITAL SKILLS AND RESILIENCE DURING THE COVID-19 ECONOMIC CRISIS

Across the three action areas of digital skilling, Google has made significant contributions in Indonesia through its digital skills programs and related initiatives. Many of these efforts have been instrumental in allowing small businesses to manage the economic impacts of the COVID-19 pandemic.

An initiative offering free training and tools to help individuals access digital skills, "Grow with Google" has been instrumental in supporting the digital upskilling of Indonesia's current workforce. A survey found that 98 percent of participants have seen an improvement in their digital skills after attending the "Grow with Google" program.⁸⁵ The program has also provided a great boost to Indonesian MSMEs during the COVID-19 pandemic. As customers gravitate towards online marketplaces during the pandemic, it has become an imperative for retailers to scale their digital presence quickly and increase operational efficiency to meet surges in online demand amid manpower shortages. In response, Google provided more than 320,000 business owners virtual training under the "Grow with Google" program to maintain business continuity when operations were disrupted by social distancing measures implemented during the COVID-19 pandemic.⁸⁶ The "Grow with Google" program also gained the support of several ministries during the pandemic, such as the Ministry of Tourism and Ministry of Communication and Information Technology.

Two key programs offered under "Grow with Google" are delivering significant skilling impact in Indonesia: "Gapura Digital" and "Bangkit". Through "Gapura Digital", MSME owners in Indonesia receive training on Google's digital marketing platforms to help them transition to online business models and be better prepared to enter international markets. At the same time, as part of Google's broader Rp 11.8 trillion (US\$800 million) global commitment to support small businesses and crisis response during the pandemic, Google disbursed advertising credits to MSMEs in Indonesia.⁸⁷ This has allowed small businesses like Risum to benefit from using Google Ads among other promotional tools introduced during Google's "Gapura Digital" classes (see Box 8).

Another key program under "Grow with Google" is "Bangkit", is an academy developed in collaboration with local unicorns Go-Jek, Tokopedia and Traveloka to train and produce high-caliber digital talent for Indonesian technology companies and start-ups (see Box 9).⁸⁸

Google has also supported several programs aimed at equipping the country's future workers with relevant digital skills. A US\$1 million grant was recently provided by Google's charitable non-profit arm, Google.org, to support the "Bebras Indonesia" program.⁸⁹ Led by the global non-profit education organization, Bebras International, this initiative aims to train K-12 educators on how to teach computational thinking and problem-

85. Kantar (2020), Google Economic Impact. Available at: https://www.kantar.com.au/Google/Google_Economic_Impact.pdf

86. Google in Indonesia (2020), "Dari UMKM hingga startup, program terbaru kami dirancang untuk membantu pelaku UMKM bertahan di tengah pandemic." Available at: <https://indonesia.googleblog.com/2020/08/dari-umkm-hingga-startup-program.html>

87. Google in Indonesia (2020), "Dari UMKM hingga startup, program terbaru kami dirancang untuk membantu pelaku UMKM bertahan di tengah pandemic." Available at: <https://indonesia.googleblog.com/2020/08/dari-umkm-hingga-startup-program.html>

88. Google Indonesia (2020), "Bangkit". Available at: <https://events.withgoogle.com/bangkit/>

89. Google in Asia (2020), "New skills for Indonesia's next generation". Available at: <https://www.blog.google/around-the-globe/google-asia/new-skills-for-indonesias-next-generation/>

solving skills to students through computer science education.⁹⁰ Components of this program include programming algorithms, data structures and concepts in human-computer interaction.⁹¹ Through the recent Google.org grant, Google is planning to launch “Gerakan Pandai”, a new program designated to train 22,000 Indonesian teachers in computational thinking by 2021, with the hope that they will educate 2 million students in these skills by 2022.⁹²

To support the development of aspiring developers in cloud computing skills, Google launched the “Juara GCP” (“Champion Google Cloud Platform”) and “Associate Cloud Engineer” programs, which have trained about 14,000 aspiring Indonesian developers in cloud computing skills through the Google Cloud Platform since 2019. The latter was part of the KOMINFO’s “Digital Talent Scholarship” program, alongside the “Digital Entrepreneurship Academy” which has trained over 9,500 SME owners. Box 10 shows how “Juara GCP” supported Vioni, a 23-year-old budding developer in her cloud learning journey, eventually landing her a job as a full stack developer in the company Metrodata Electronics, where she now creates and develops web-based applications.

In addition, Google has a series of programs that aims to support broader access to digital skilling opportunities for underserved groups in the nation, in particular for women and youth. To address gender disparity in economic opportunities, Google’s “Women Will” initiative was organized to help women leverage technologies to build their own businesses through a combination of training programs, events and advocacy.⁹³ As of 2020, this program has reached over 550,000 Indonesian women. Box 11 shows an example of how Google’s “Women Will” program had not only

led to the discovery of a new revenue stream for local restaurant owner, Retno Utari, but also increased the brand’s visibility on Google My Business that helped customers search for business listings easily.

To educate the Indonesian public about online safety practices, Google collaborated with the Ruangguru Foundation to develop “Let’s Go, Smart Internet!” – a program which aims to improve the awareness and resilience of Indonesian youth to online threats such as cyberbullying (see Box 12).



90. Bebras Indonesia (2020). Available at: <http://bebras.or.id/v3/>

91. Bebras Indonesia (2020). Available at: <http://bebras.or.id/v3/>

92. Google in Asia (2020), “New skills for Indonesia’s next generation.”

Available at: <https://www.blog.google/around-the-globe/google-asia/new-skills-for-indonesias-next-generation/>

93. Womenwill Indonesia (2020). Available at: <https://www.womenwill.com/indonesia>

BOX 8.

RISUM: SMALL BUSINESS RETOOLS EXISTING APRON BUSINESS TO SELL MASKS DURING COVID-19 PANDEMIC

Alita Harsaningtyas from Yogyakarta established an apron-making business, Risum, in 2018 after seeing multiple cafes and coffee shops emerging around her village in Mladangan, Sleman Regency. However, these food services ran into financial difficulties after demand dried up which impacted Alita's apron business. When she saw that people had started hoarding masks and its prices began to soar, Alita decided to exploit the opportunity and reinvent her business to sell masks instead.

Appealing to the local community, Alita would donate one mask for every mask she sold. After distributing 1,000 masks, her donation efforts paid off when more people came to know her business and collated orders among themselves to purchase in large quantities from Risum.⁹⁴ With Google Maps and Google My Business, residents became aware of her physical workshop location and visited her directly to pick up their masks.

As a participant of the "Gapura Digital" program, Alita attributed her business success to the digital marketing tools she learnt in class. She remarks, "Initially, Risum customers came only from sites that displayed educational products and articles. After taking 'Gapura Digital' classes and learning about Google Ads for promotion, my business has really improved. I'm so grateful for that."⁹⁵



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Mari kita bantu orang lain untuk memutus rantai penyebaran virus **Covid-19!** dengan cara memberikan masker bagi yang membutuhkan

PAKET MASKER DONASI (4pcs)
Rp25.000

2 PCS UNTUK CUSTOMER

2 PCS UNTUK DIDONASIKAN

Masker kain akan dibagikan kepada masyarakat yang bekerja harian seperti tukang becak, pedagang asongan, pemulung, dan tukang sampah

Photo Source: <https://indonesia.googleblog.com/2020/08/dari-umkm-hingga-startup-program.html>

94. Case study from Google: "Dari apron hingga masker, UMKM asal Yogya ini temukan kesuksesan baru di tengah masa sulit"

95. Case study from Google: "Dari apron hingga masker, UMKM asal Yogya ini temukan kesuksesan baru di tengah masa sulit"

BOX 9.

“BANGKIT” BY GOOGLE - EXPANDING INDONESIA’S DIGITAL INDONESIAN YOUTH

“Bangkit” is an intensive six-month program for developers run in partnership with other technology companies GoJek, Tokopedia and Traveloka, as well as leading Indonesian universities in Jakarta, Bandung, Denpasar and Yogyakarta.⁹⁶ A free but highly selective program, it trains 300 highly motivated and talented developers across the country in a range of technical skills (e.g., machine learning) as well as more general “soft skills” that will help them advance their careers in the technology sector.⁹⁷ The intent is for “Bangkit” to help expand the pool of digital talent in Indonesia, making it easier for firms in the technology sector, including the burgeoning start-up industry, to hire people with the skills they need - and supporting Indonesia’s digital economy as it continues to grow.⁹⁸ The program offers a blended (online and offline) curriculum that spans six months including seven weekend workshops.⁹⁹

The program has led to the development of several innovations by youth. For instance, one of the participating teams from Jakarta leveraged machine learning skills taught during the program to develop an interactive language learning application that teaches Indonesians regional languages which have become gradually forgotten.¹⁰⁰ Another team from Bandung created an ingredient detection application using machine learning to recommend homecooked recipes based on readily available ingredients at home.¹⁰¹ This application came particularly useful at a time where many chose to cook at home during the COVID-19 outbreak.

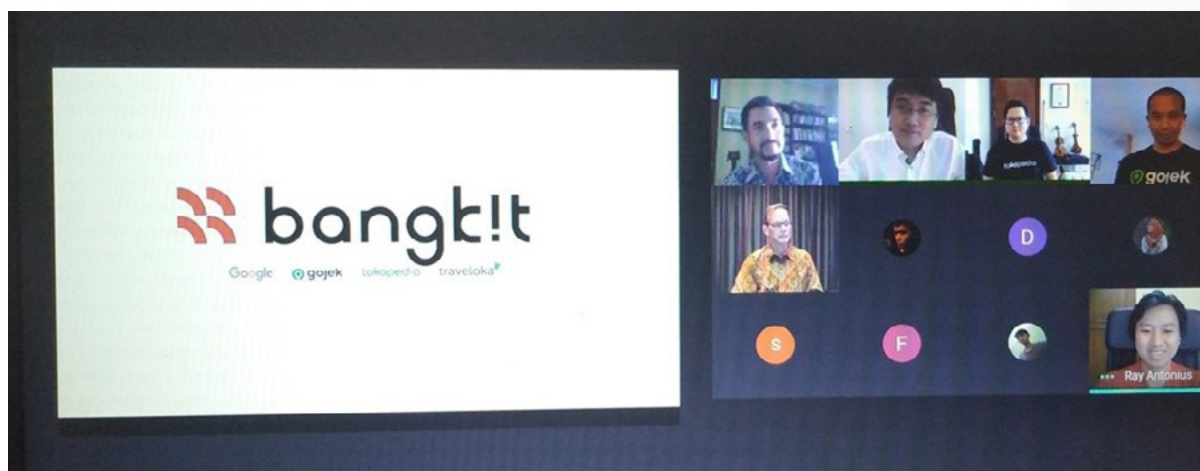


Photo Source: <https://siedoo.com/berita-32527-google-umumkan-219-lulusan-kelas-pertama-bangkit/>

96. Google in Asia (2019), “Digital skills for Indonesia’s internet economy.”

Available at: <https://www.blog.google/around-the-globe/digital-skills-for-indonesia/>

97. Google in Asia (2019), “Digital skills for Indonesia’s internet economy.”

Available at: <https://www.blog.google/around-the-globe/digital-skills-for-indonesia/>

98. Google in Asia (2019), “Digital skills for Indonesia’s internet economy.”

Available at: <https://www.blog.google/around-the-globe/digital-skills-for-indonesia/>

99. Bangkit (2020), An exclusive machine learning academy led by Google. Available at: <https://events.withgoogle.com/bangkit/>

100. Google in Indonesia (2020), “Empat ide terbaik dari peserta Bangkit angkatan 2020.”

Available at: <https://indonesia.googleblog.com/2020/09/empat-ide-terbaik-dari-peserta-bangkit.html>

101. Google in Indonesia (2020), “Empat ide terbaik dari peserta Bangkit angkatan 2020.”

Available at: <https://indonesia.googleblog.com/2020/09/empat-ide-terbaik-dari-peserta-bangkit.html>

BOX 10.

JUARA GCP GRADUATE LANDS FULL-TIME JOB AFTER EARNING GOOGLE CLOUD PLATFORM CERTIFICATION

When 23-year-old Vioni was selected as a Digital Talent Scholarship recipient from the Indonesian Ministry of Communications and Information (KOMINFO) in 2019, she became interested in using Google Cloud Platform to embark on a programming career in the IT industry. She explained, "Besides being trusted to have world-class security, GCP is also easy to learn and use by anyone because of its complete features. From here I know that Google accommodates developers to explore GCP through the JuaraGCP training." The "JuaraGCP" program imparts skills in artificial intelligence, machine learning and big data which supported Vioni's current job as a full stack developer. After earning her certification, she was empowered to share her knowledge as a C programming language instructor to teach students at Bekasi BLK (Job Training Center). She also mentioned her biggest dream was to "become an IT expert at a world-class company like Google."¹⁰²



102. Google in Indonesia (2020), "Tekad Vioni untuk menjadi programmer yang tidak hanya duduk di meja, tapi bisa berbagi ilmu keliling dunia." Available at: <https://indonesia.googleblog.com/2020/06/menjelang-peluncuran-google-cloud.html>

BOX 11.

RETNO UTARI: SOCIAL MEDIA MARKETING SKILLS TAUGHT AT “WOMEN WILL” PROVIDED NEW DISTRIBUTION CHANNEL FOR RESTAURANT BUSINESS

Social distancing measures implemented during the COVID-19 pandemic have led to lower footfall in shopping malls which threatened the survival of businesses in the retail, food, and beverage industry. For Retno Utari, the owner of a sushi restaurant, “Sushi Rakyat”, that started in 2011, her business struggled to stay afloat when takings from her offline restaurant were insufficient to cover operational costs. Thus, she explored online platforms to diversify her food distribution channel. Previously, Retno utilized digital tools such as Google Maps and Google My Business to drive traffic to her offline restaurant. Since then, her listing had garnered more than 130 positive reviews.¹⁰³

To expand on her existing network, she signed up for Google’s virtual “Women Will” class which was tailored to support women entrepreneurs in connecting with customers through social media. Apart from the additional revenue received from online orders, Retno’s newly established online business flourished after she created promotional “iftar” packages during the fasting month (“Ramadan”) by exploiting social media marketing skills acquired during the virtual class.¹⁰⁴ After attending the program, her listing on Google My Business accumulated 147 positive reviews.



Photo Source: <https://entrepreneur.bisnis.com/read/20200513/88/1239852/genjot-penjualan-kedai-sushi-rakyat-manfaatkan-platform-online>

103. Google in Indonesia (2020), “Tantangan Bisnis Sushi di Tengah Pandemi COVID-19 selama Ramadan.” Available at: <https://indonesia.googleblog.com/2020/05/tantangan-bisnis-sushi-di-tengah.html>

104. Google in Indonesia (2020), “Tantangan Bisnis Sushi di Tengah Pandemi COVID-19 selama Ramadan.” Available at: <https://indonesia.googleblog.com/2020/05/tantangan-bisnis-sushi-di-tengah.html>

BOX 12.

“LET’S GO, SMART INTERNET!” INITIATIVE TO EDUCATE INDONESIAN YOUTH ON RESPONSIBLE USE OF THE INTERNET

While significant improvements to Indonesia’s digital literacy rate over recent years have brought Indonesians unparalleled access to new sources of information and conveniences, new risks in the form of online hoaxes, radicalization efforts through the Internet and cyberbullying have also grown. To build the resilience of Indonesia’s online community to such threats, Google’s charitable arm, Google.org, collaborated with the non-profit entity of one of Indonesia’s largest online learning platforms, the Ruangguru Foundation, to develop the program “Let’s Go, Smart Internet!”¹⁰⁵ Launched in 2019, this was organized as part of a wider campaign to enhance the digital literacy of Indonesia’s youth.

Outreach by the program is conducted both online and offline. As part of its online channels, the program developed 27 videos addressing a range of topics pertaining to online etiquette and interactions. These may be accessed for free on the Ruangguru mobile app; at present, approximately 25,000 of Ruangguru’s online learning platform users have already accessed them. Training on these topics has also been provided to over 300 teachers in four Indonesian cities (Tabanan, Samarinda, Cilacap and Bandung), with the aim of equipping them with the pertinent knowledge to be passed onto their students. Such training is planned to take place in more cities and schools over the coming years.



Photo Source: <https://www.mime.asia/ruangguru-launches-facility-to-simplify-students-and-teachers-interaction/>

105. Arindra Meodia (2019), “Ruangguru dan Google meluncurkan program ‘Yuk, Cerdas Berinternet!’”. Antara News. Available at: <https://www.antaranews.com/berita/1083450/ruangguru-dan-google-luncurkan-program-yuk-cerdas-berinternet>



APPENDIX

Beyond its digital skills programs and initiatives, Google supports a range of economic benefits to Indonesian businesses and consumers. The economic benefits of Google's products in 2019 – which include Google Search, Google Maps, Google Drive, Google Ads, AdSense, and Google Play – are estimated to be worth Rp 185 trillion (US\$12.7 billion) for Indonesian businesses, and about Rp 165 trillion (US\$11.3 billion) for Indonesian consumers.

GOOGLE'S BROADER ECONOMIC CONTRIBUTIONS TO INDONESIA

Beyond its digital skills programs, Google's applications and services also bring about substantial economic benefits in Indonesia. These are estimated to be worth Rp 185 trillion (US\$12.7 billion) for Indonesian

businesses, and about Rp 165 trillion (US\$11.3 billion) for Indonesian consumers in 2019.¹⁰⁶ An overview of the assessed economic benefits of Google products is provided in Exhibit A1 and explained in detail below.

A1. CONSUMER BENEFITS

The consumer benefits supported by Google products come in the form of increased productivity, improved access to information, and time saved in the everyday lives of Indonesians.

Google provides benefits to Indonesian consumers by allowing them to instantly access a vast array of information online. The total consumer surplus brought about by **Google Search** was estimated at over Rp 46 trillion (US\$3.1 billion) in 2019. With an international study showing that a search that takes 21 minutes in the library takes only 7 minutes online,¹⁰⁷ it was estimated that Google Search saved the Indonesian consumer an average of 9 days in 2019 (after adjusting for the higher online search volume vis-à-vis non-digital channels).

YouTube has also presented substantial benefits to consumers. Not only are YouTube videos often a source of free entertainment to consumers, but they also

provide a channel for consumers to learn new skills (e.g., online "how-to" videos) or gain new knowledge (e.g., online documentaries). According to AlphaBeta research, over 40 percent of YouTube users in Indonesia say they use online video services to learn advanced digital skills such as coding, software programming, mobile application and website development.¹⁰⁸ Box 13 shows how a local YouTuber has gained success from monetizing his channel subscribers on the platform.

Google Maps has provided tremendous productivity benefits in the commuting and driving journeys of Indonesian citizens through the service's wayfinding and navigation feature, which optimizes these trips using real-time data such as public transport arrival times and road traffic conditions. Commuters who used Google Maps to optimize their public transport journeys spent 8 hours less on trains and buses, while drivers who used the service for navigation spent over 14 hours less on the roads. The total consumer benefits brought about by

106. The Google products included in the estimation of business benefits are Google Search and Google Ads, AdSense, and Google Play. The Google products included in the estimation of consumer benefits are Google Search, Google Maps, Google Drive and Google Play.

107. Yan Chen, Grace YoungJoo Jeon and Yong-Mi Kim (2014), A day without a search engine: an experimental study of online and offline search. *Experimental Economics*. Available at: <https://link.springer.com/article/10.1007/s10683-013-9381-9>

108. Google/AlphaBeta Economic Impact Report survey, n = 515. Percent represents use of online video services to learn advanced digital skills amongst Indonesians for whom YouTube is their most frequently used online video service.

EXHIBIT A1:

EXAMPLES OF BENEFITS SUPPORTED BY GOOGLE IN INDONESIA IN 2019

PRODUCT/S	BUSINESS BENEFITS	CONSUMER BENEFITS
Google Search and Ads	<ul style="list-style-type: none"> Google Ads supported Rp 184 trillion (US\$12.6 billion) in net advertising benefits for Indonesian businesses 	<ul style="list-style-type: none"> Google Search saved users over 9 days a year The total consumer benefits brought about by Google Search were estimated at over Rp 46 trillion (US\$3.1 billion) in 2019
Google Maps	<ul style="list-style-type: none"> 80% of Indonesian MSMEs in Indonesia use "Google My Business", a free tool for businesses to enhance the visibility of their online presence through geospatial advertising, to reach a wider range of customers 	<ul style="list-style-type: none"> Google Maps users in Indonesia spent 8 hours less on public transport per year Drivers in Indonesia who used Google Maps for navigation spent over 14 hours less on the roads The total consumer benefits brought about by Google Maps were estimated at Rp 39.2 trillion (US\$2.7 billion) in 2019
YouTube and AdSense	<ul style="list-style-type: none"> Advertisers in Indonesia earned more than Rp 578 billion (US\$39.5 million) in net advertising benefits through displaying their advertisements using AdSense 	<ul style="list-style-type: none"> According to AlphaBeta research, over 40% of YouTube users in Indonesia say they use online video services to learn advanced digital skills such as coding, software programming, mobile application and website development¹
Google Drive	<ul style="list-style-type: none"> By providing secure access to files and data in a single location accessible through multiple devices, Google Drive improves the ease of collaboration within and across businesses 	<ul style="list-style-type: none"> Google Drive allows digital data to be stored and accessible through multiple devices, bringing over Rp 41 trillion (US\$2.8 billion) worth of consumer surplus to Indonesians in 2019
Google Play	<ul style="list-style-type: none"> Indonesian app developers earn over Rp 265 billion (US\$18.1 million) annually through Google Play from both the domestic and international markets 	<ul style="list-style-type: none"> Google Play is a convenient platform for consumers to access a range of smartphone applications, digital books, music, and films The total consumer benefits derived from Google Play in 2019 were estimated at over Rp 38 trillion (US\$2.6 billion)
TOTAL BENEFITS	RP 185 TRILLION (US\$12.7 BILLION)	RP 165 TRILLION (US\$11.3 BILLION)

1. Google/AlphaBeta Economic Impact Report survey, n = 515. Percent represents use of online video services to learn advanced digital skills amongst Indonesians for whom YouTube is their most frequently used online video service.

SOURCE: Data in exhibit is estimated by AlphaBeta using a range of original and third party sources. See Appendix for detailed methodology.

Google Maps in 2019 were estimated at Rp 39.2 trillion (US\$2.7 billion) in 2019.

In addition, Google's operating system, **Android**, and digital product distribution system, **Google Play**, have

brought a variety of benefits to Indonesian consumers. For example, Android enables consumers to choose from over 2.8 million apps available on the Android ecosystem.¹⁰⁹ Meanwhile, **Google Play** is a convenient platform for consumers to access a range of smartphone

109. AlphaBeta (2018), "AlphaBeta research brief: The estimated economic impact from Android across five Asian markets". Available at: <https://www.alphabeta.com/wp-content/uploads/2017/08/180820-Android-Economic-Impact.pdf>

BOX 13.

YOUTUBER ATTA HALILINTAR EARNS US\$1.59 MILLION MONTHLY FROM 18.5 MILLION CHANNEL SUBSCRIBERS

Atta Halilintar started his YouTube channel in 2016 with his parents and 10 younger siblings. He posts vlogs, prank videos and interviews with celebrities in their homes which were hugely popular among Indonesian millennials. One of his most popular prank videos, in which he attempted to seal his friend's Lamborghini with plastic wrap, racked up over 15 million views. Through the platform, YouTubers like Atta receive advertising revenues based on the number of views from advertisements played on the content creator's videos and merchandise sales. As of August 2019, Atta has more than 18.5 million channel subscribers and was ranked 8th among the highest earning YouTubers globally at US\$1.59 million worth of monthly revenues by brand merchandise specialist Purple Moon Promotional Products.

applications, as well as digital books, music and films. The total consumer benefits derived from Google Play in 2019 were estimated at over Rp 38 trillion (US\$2.6 billion).

By allowing digital data to be stored and accessible through multiple devices including laptops, tablets and smartphones, **Google Drive** provides great convenience to users. The service enables users to manage files, folders, music and photos on the fly, bringing over Rp 41 trillion (US\$2.8 billion) worth of consumer surplus to Indonesian consumers in 2019.

Taken together, the total value placed by consumers on these products (Google Search, Google Maps, Google Play, and Google Drive)¹¹⁰ – which takes into account their perceived functionality and ease of using these products – was estimated to be about Rp 165 trillion (US\$11.3 billion) in 2019.

The above estimates were derived using data from AlphaBeta's consumer survey, as well as from thousands of driving and public transport trips simulated on Google Maps. A detailed description of the methodology is provided in Appendix B.

A2. BUSINESS BENEFITS

The business benefits supported by Google products come in the form of increased revenue (through increased customer outreach and new revenue channels), as well as improved productivity (through reduced costs and time savings).

Google helps businesses grow their customer base through a number of online advertising tools. It has been found, for example, that businesses can earn up

to 8 times their advertising expenditure on search-based advertising tools.¹¹¹ Online search engines can be invaluable particularly to MSMEs that lack the scale and resources to run large marketing campaigns on traditional media such as television, radio and newspapers, or tap into distribution channels controlled by heavy-weight industry players. Online video-based advertising has also allowed small businesses to target customers outside their immediate vicinity, and at low

110. This utilizes the economic "consumer surplus" concept. Referring to the price the consumer is willing to pay for a product or service and the price that he or she actually pays, this concept is used in economic analysis to reflect the amount of utility that consumers receive from the product or service.

111. Based on estimates by Varian (2009), Jansen & Spink (2009), and Deloitte Google's Economic Impact UK (2015).

cost. Digital maps are also used by businesses to improve their visibility – through the use of relevant advertising to acquire new customers.

The online advertising tools that Indonesian businesses benefit from include **Google Search, Google Ads**¹¹², **AdSense**¹¹³ and **Google Maps**. These products allow advertisers to generate net advertising benefits from displaying their advertisements, as well as gain wider customer outreach through leveraging such platforms.¹¹⁴ In 2019, **Google Search and Google Ads** were estimated to have generated Rp 184 trillion (US\$12.6 billion) in advertising benefits for Indonesian businesses. Advertisers in the country also earned about Rp 578 billion (US\$39.5 million) in net advertising benefits

through displaying advertisements using AdSense. In addition, by allowing companies to establish a strong online presence through online business listings that show up prominently on the relevant search results of customers in the vicinity, the “Google My Business” feature on **Google Maps** has allowed a number of Indonesian MSMEs to be discovered by a larger range of prospective customers than they were exposed to before. Box 14 illustrates an example of an Indonesian MSME which has benefited in terms of revenue improvements and productivity gains by making use of “Google My Business”.

In addition, **Google Play** and **Android** have resulted in a variety of benefits to app developers. Indonesian app

BOX 14. USING “GOOGLE MY BUSINESS” TO PROMOTE LOCAL ECO-TOURISM

“Google My Business” has been a significant channel for customer outreach for Indonesian MSMEs. An example is that of Moga River Park, a secluded nature reserve and adventure park in Tegal, Central Java. Started in 2016, founder Ikmaludin Azis had a simple but strong desire to promote awareness of the impact of irresponsible littering to the natural environment through the activity of river rafting. However, Ikmaludin faced difficulties in promoting his business. Methods such as distributing flyers and encouraging satisfied customers to pass the word to their friends and family were limited in their effectiveness, and outreach was particularly challenging given the park’s remote location.

In a bid to explore new ways of engaging customers, Ikmaludin registered his business with “Google My Business” after joining Google’s “Gapura Digital” program, which aims to educate MSME owners on digital marketing tools that can be leveraged to expand customer outreach. Shortly after doing so, the park experienced a significant 10-fold increase in the number of monthly visitors from about 60 to 600, and sales increased 200 percent.¹¹⁵ Ikmaludin states, “We are truly proud and happy that we are not just known in our district but also from other districts and provinces. Even some foreign tourists have stopped by.”¹¹⁶

112. Google Ads is Google’s online advertising service that allows businesses to place information on Google Search results based on keywords and Google Display Network partner websites.

113. AdSense is a Google service that allows publishers and content creators within the Google Display Network to display AdWords ads on their websites and monetize them.

114. Net advertising benefits refers to the increase in revenues and sales that can be directly attributed to advertising minus the related advertising expenditure.

115. Google (2020), “Gapura Digital”. Available at: <https://gapuradigital.withgoogle.com/stories>

116. YouTube (2018), Google Indonesia. Available at: <https://www.youtube.com/watch?v=EEZFBhOLzu0&t=42s>

developers earn over **Rp 265 billion (US\$18.1 million)** annually through Google Play from both the domestic and international markets.¹¹⁷ Further, app developers in Indonesia can readily reach more than 1 billion users globally through the Android operating system.¹¹⁸

The running of such applications has been supported by Google's significant investments of more than US\$2 billion in **network infrastructure** to help improve the

capacity of network services in the Asia Pacific (APAC) region, including Indonesia. Box 15 shows the impact of Google's network infrastructure investments on Indonesian businesses.

The above business benefits were estimated based on a combination of third-party data and publicly available sources. A detailed description of the methodology is provided in Appendix B.

BOX 15. GOOGLE'S NETWORK INFRASTRUCTURE INVESTMENTS LEAD TO INCREASED BUSINESS ACTIVITY, CONTRIBUTING RP 292 TRILLION TO INDONESIA'S GDP DURING 2010-2019

By improving the capacity of network services, network infrastructure investments enable faster data transfers and greater efficiency, allowing business users to seamlessly deliver their applications and services to customers around the globe. With the addition of submarine cables and edge infrastructure such as the trans-Pacific undersea fibre cable, businesses are able to benefit from connectivity improvements including faster end-user speeds and lower international connectivity costs.

A recent study found that by allowing for increased business activity through higher rates of Internet use, Google's investments in network, submarine cables and edge infrastructure in APAC collectively contributed a total US\$20 billion (Rp 292 trillion) to Indonesia's GDP cumulatively from 2010 to 2019.¹¹⁹ The study also found that Google's network infrastructure investment spurred job creation through two channels: direct job creation in the construction and telecommunications sectors, and indirect job creation facilitated by the improvement of broadband connectivity (especially in the IT, financial services and manufacturing sectors). The same study estimated that a total of 160,000 jobs were created as a result of Google's network investments in Indonesia in 2019.¹²⁰

117. Google Play is a digital distribution service operated and developed by Google. It serves as the official app store for the Android operating system, which refers to the mobile operating system developed by Google for touchscreen mobile devices such as smartphones and tablets. Google Play users are able to browse and download applications developed with the Android software development kit.

118. AlphaBeta (2018), "AlphaBeta research brief: The estimated economic impact from Android across five Asian markets". Available at: <https://www.alphabeta.com/wp-content/uploads/2017/08/180820-Android-Economic-Impact.pdf>

119. Analysys Mason (2020), Economic impact of Google's APAC network infrastructure – Focus on Indonesia. Available at: <https://www.analysysmason.com/consulting-redirect/reports/impact-of-google-network-APAC-2020/>

120. Analysys Mason (2020), Economic impact of Google's APAC network infrastructure – Focus on Indonesia. Available at: <https://www.analysysmason.com/consulting-redirect/reports/impact-of-google-network-APAC-2020/>

METHODOLOGY

B1. SIZING THE DIGITAL SKILLS VALUE

The value of digital skills in Indonesia was estimated based on the relevant GDP contributions from digitally skilled workers in the economy.

Given the importance of digital skills in both technology (e.g., ICT services) and non-technology sectors (e.g., manufacturing), the economic contributions of workers with digital skills throughout the economy have been assessed in this report. As reflected in Exhibit 1 in Chapter 1, three categories of workers were considered.

These include:

- a. Workers in the technology sector (e.g., AI developers, software developers, cloud engineer in technology or software companies);
- b. Digital workers in non-technology sectors (e.g., Building Information Modelling engineers in construction companies, automation engineers in manufacturing companies); and
- c. Non-digital workers in non-technology sectors who require digital skills to perform their jobs (e.g., factory workers in the manufacturing industry who require some level of IT proficiency to operate machinery).

In this report, the technology sector is defined as comprising a set of sub-sectors in which digital services are produced. The sub-sectors defined under the technology sector include the following industries under Indonesia's "Information and Communications" sector:¹²¹

- Telecommunications
- Programming Activities, Computer Consultation and Activities
- Information Service Activities

SIZING THE CURRENT (2019) VALUE OF DIGITAL SKILLS

Category 1: *Workers in the technology sector*

The GDP contribution from these workers was sized based on the sum of GDP contributions from the constituent sub-sectors of the technology sector. As this breakdown was not available in the national statistics, the figure was referenced from a press release by the Ministry of Information and Communication, in which an estimate of the GDP contributions from the relevant sub-sectors was provided.¹²²

Category 2: *Digital workers in non-technology sectors*

The economic value of the digital skills of workers in technology-related occupations in Indonesia's non-technology sectors (termed "digital workers") was sized based on the sum of their GDP contributions. Similar to workers under Category 1, workers' full GDP contributions were included since digital skills are essential for them to perform their jobs.

As detailed information on digital jobs and skills are not available from national statistics, online job portal data

121. This set of sub-sectors is similar to those identified in AlphaBeta's 2019 report, Australia's digital opportunity, which sized the economic contribution of Australia's technology sector. See: AlphaBeta (2019), Australia's digital opportunity. Available at: <https://www.alphabeta.com/our-research/australias-digital-opportunity-growing-a-122-billion-a-year-tech-industry/>. List of subsectors for Indonesia retrieved from Statistics Indonesia (BPS). See: Statistics Indonesia (BPS). Available at: <https://www.bps.go.id/>

122. Kementerian Komunikasi Dan Informatika Republik Indonesia (2017), "Sektor telekomunikasi dan informasi diharapkan tumbuh 9 persen". Available at: https://www.kominfo.go.id/content/detail/8934/sektor-telekomunikasi-dan-informasi-diharapkan-tumbuh-9-persen/0/sorotan_media

was used to derive proxies for the share of workers in each sector with technology-related or digital jobs. Job listings across different sectors were collected from Karir, an Indonesian job portal.¹²³ For each sector, technology-related job titles were filtered out of the general sample of job postings, using keyword searches.¹²⁴ The underlying assumption is that online job postings form a representative sample of job listings in the industry, which in turn gives a representative picture of employment needs by occupation in the industry.

Category 3:

Non-digital workers applying digital skills at work in non- technology sectors

The economic value of the digital skills of non-digital workers who apply digital skills in their jobs in non-technology sectors was sized based on a proportion of their GDP contributions. The economic value is not equivalent to the total GDP contribution per worker as the economic contribution of such workers is not derived entirely from digital skills - a proportion of this will come from their non-digital skills. Rather, digital skills are additive to workers' other skills, i.e., they enhance workers' productivity and this additional GDP contribution generated is the economic value that digital skills provide.

However, in order to establish the additional productivity benefits from digital skills, the baseline total GDP contribution of these workers needs to be established first. In the absence of detailed data on digital skills

in the working population by sector from Indonesia national statistics, job portal data was again used to derive proxies for the share of workers in each sector who apply digital skills in their jobs.¹²⁵ For each sector, job listings with digital skill requirements were filtered using keyword searches applied to the required skills stated for the listings.¹²⁶

To correct for any possible overestimation of the shares of digitally skilled workers since job portal data is a representation of labor demand, the derived shares were compared against existing estimates available for Indonesia from third-party sources. To avoid any double counting issues, the share of non-digital workers who apply digital skills at work was derived by subtracting the share of workers with digital jobs from the share of workers who apply digital skills at work – for each sector.

To ensure that only the relevant proportion of these workers' GDP contributions (i.e. the additional GDP generated from digital skills) are captured (since not all of their economic output is linked to digital skills), a ratio based on the incremental labor productivity that could be achieved due to digital skills was applied to the full GDP contributions. According to a 2017 study by Burning Glass Technologies, jobs that require baseline digital skills pay a 17 percent premium over equivalent non-digital roles.¹²⁷ The underlying assumption in this methodology is that wage premiums accorded to digital skills are equal to the incremental improvement in labor productivity that could be achieved due to digital skills.

123. The job portal used for the analysis is Karir (See: Karir. Available at: <https://www.karir.com/>) This job portal was selected due to its high number of job listings across a wide range of sectors, as compared to other job portals in the country, as well as the large number of data points available for each industry sectors (i.e., other job portals tended to focus on specific industry sectors). A total number of 4,532 job listings across 12 industry sectors from this portal was analyzed. The job listings analyzed were for both fresh graduates and mid-career professionals.

124. Keywords include: "ICT", "online", "web", "graphic", "data", "digital", "AI", "artificial intelligence", "machine learning", "UI design", "UX design", "Internet", "sensor", "software development", "software design", "IT engineer", "cloud", "programmer", "mobile marketing", "mobile design", "e-commerce", "5G", "electronics engineer", "electrical engineer", "telecommunications engineer", "systems analyst", "IoT", "automation", "automate", "application", "information systems", "IT manager", "IT consultant", "developer", "social media" and "technology".

125. The job portal used for the analysis is Karir (See: Karir. Available at: <https://www.karir.com/>) This job portal was selected due to its high number of job listings across a wide range of sectors, as compared to other job portals in the country. A total number of 4,532 job listings from this portal was analyzed.

126. Keywords include: "ICT", "online", "computer", "data", "programming", "software", "IT skills", "technology", "information technology", "digital", "graphic", "AI", "artificial intelligence", "machine learning", "UI design", "UX design", "Internet", "sensor", "cloud", "e-commerce", "5G", "PowerPoint", "coding", "IoT", "technology", "Excel", "PC", "CAD", "illustrator", "photoshop", and "information".

127. Burning Glass Technologies (2017), The digital edge: Middle-skill workers and careers.

Available at: https://www.burning-glass.com/wp-content/uploads/Digital_Edge_report_2017_final.pdf

EXHIBIT A2:

THE ECONOMIC VALUE OF DIGITAL SKILLS IN THE TECHNOLOGY SECTOR IS SIZED
BASED ON THE GDP CONTRIBUTIONS FROM WORKERS IN THIS SECTOR

CALCULATION OF THE VALUE OF DIGITAL SKILLS (2019)

CATEGORY OF WORKERS		KEY INPUTS	DATA SOURCES
GDP contribution from workers in tech sector in 2019	=	GDP contribution from sub-sectors under the tech sector	National statistics
GDP contribution from digital workers in non-tech sectors in 2019	=	% of workers with digital jobs by sector	Job portal data
		×	
		Total number of workers by sector	National statistics
		×	
		Sector-specific labor productivity	National statistics
GDP contribution from non-digital workers with digital skills in non-tech sectors in 2019	=	Share of non-digital jobs requiring digital skills in non-tech sectors	Job portal data
		×	
		Number of workers in non-tech sectors	National statistics
		×	
		Sector-specific labor productivity	National statistics
		×	
		% increase in labor productivity due to digital skills	Burning Glass Technologies (2017)

SOURCE: AlphaBeta analysis

SIZING THE VALUE OF DIGITAL SKILLS AND THE OPPORTUNITY GAP IN 2030

The overall value of digital skills was sized under two scenarios for 2030:

- **“Business-as-usual” scenario.** Under this scenario, current trends in GDP and the shares of digitally skilled workers are assumed to continue to 2030; and
- **“Accelerated” scenario.** Under this scenario, Indonesia is assumed to match the performance seen in global leaders of comparable economic size and overall strong economic performance. Two criteria were used to determine the global leader: (a) the GDP of the global leader is at least 60 percent of the country’s GDP, and (b) the global leader is a high-income country.

The difference between the values of digital skills modelled under both scenarios is referred to the “opportunity gap” that could be closed if the country were to improve its digital skills base (Exhibit A3).

“Business-as-usual” scenario

The sizing approach for the three categories of workers in this scenario is as follows (Exhibit A4):

- **Workers in the technology sector.** The GDP contributions of the relevant technology sub-sectors were forecasted to 2030 using their historical 5-year compound annual growth rate (CAGR).
- **Digital workers in the non-technology sectors.** Keeping the shares of digital workers constant,

the number of digital workers was grown to 2030 based on the historical 5-year CAGR of the overall employment in the sector. For each sector, the projected number of digital workers was then multiplied by the projected average GDP output per worker (derived based on historical 5-year growth) to obtain their GDP contributions in 2030.

- **Non-digital workers applying digital skills in their jobs in non-technology sectors.** Keeping the shares of digitally skilled workers constant, the number of digitally skilled workers was grown to 2030 based on the historical 5-year CAGR of the overall employment in the sector. To avoid double-counting issues, the projected number of digital workers is subtracted from this figure for each sector to derive the projected number of non-digital workers with digital skills. Their relevant GDP contributions in 2030 was then obtained by multiplying the projected number of such workers by their projected average GDP output per worker (derived based on historical 5-year growth), and applying the same ratio (17 percent) used in the sizing of the current value to derive the relevant share of GDP contributions from such workers.

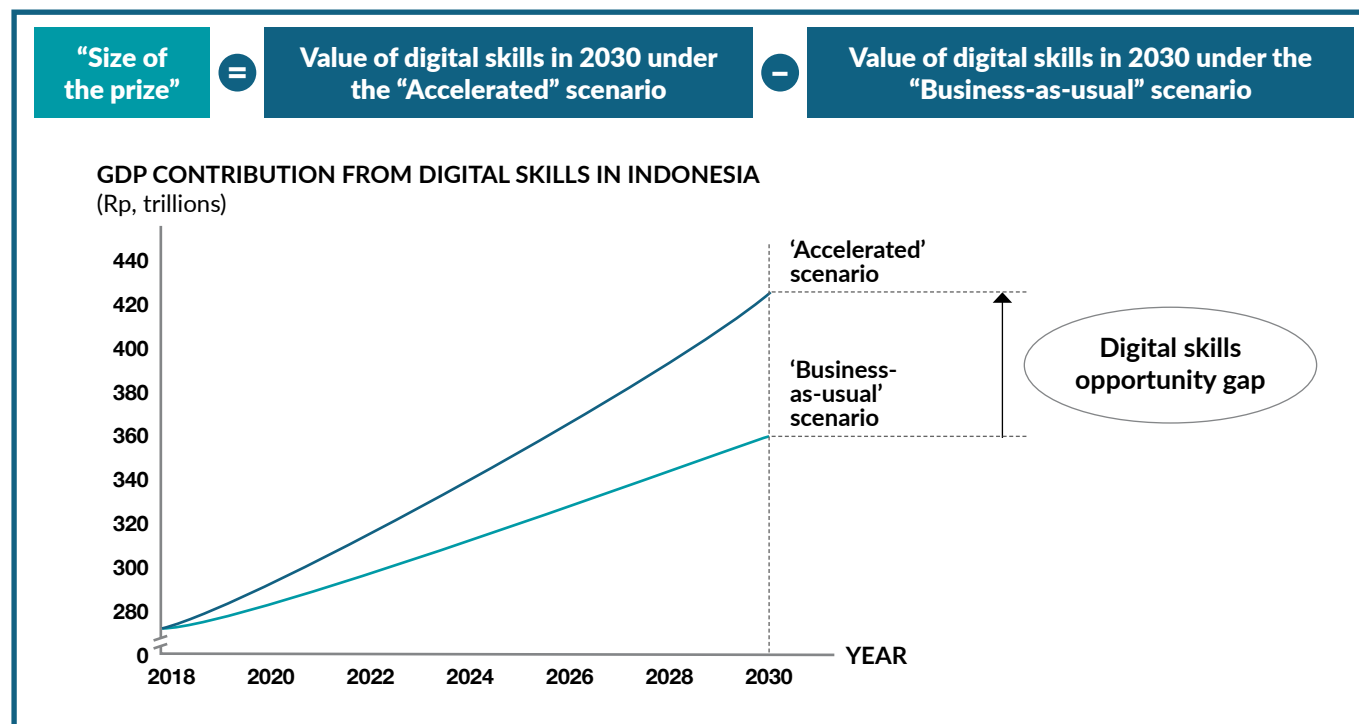
“Accelerated” scenario

To size the value of digital skills under the 2030 “Accelerated” scenario, it was assumed that Indonesia matched the performance seen in global leaders for digital skills in 2030. As reflected in Exhibit A5, for each category of workers, a global leader was selected. To ensure that the global leader is of a comparable size with Indonesia, only high-income countries of GDP of at least 60 percent of Indonesia’s GDP was considered.¹²⁸ Exhibit A5 shows the metric in the global leaders that was utilized to model the figures for Indonesia.

128. Based on the World Bank’s classification of countries by income level for 2019-2020. See: World Bank (2020). Available at: <http://blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020>

EXHIBIT A3:

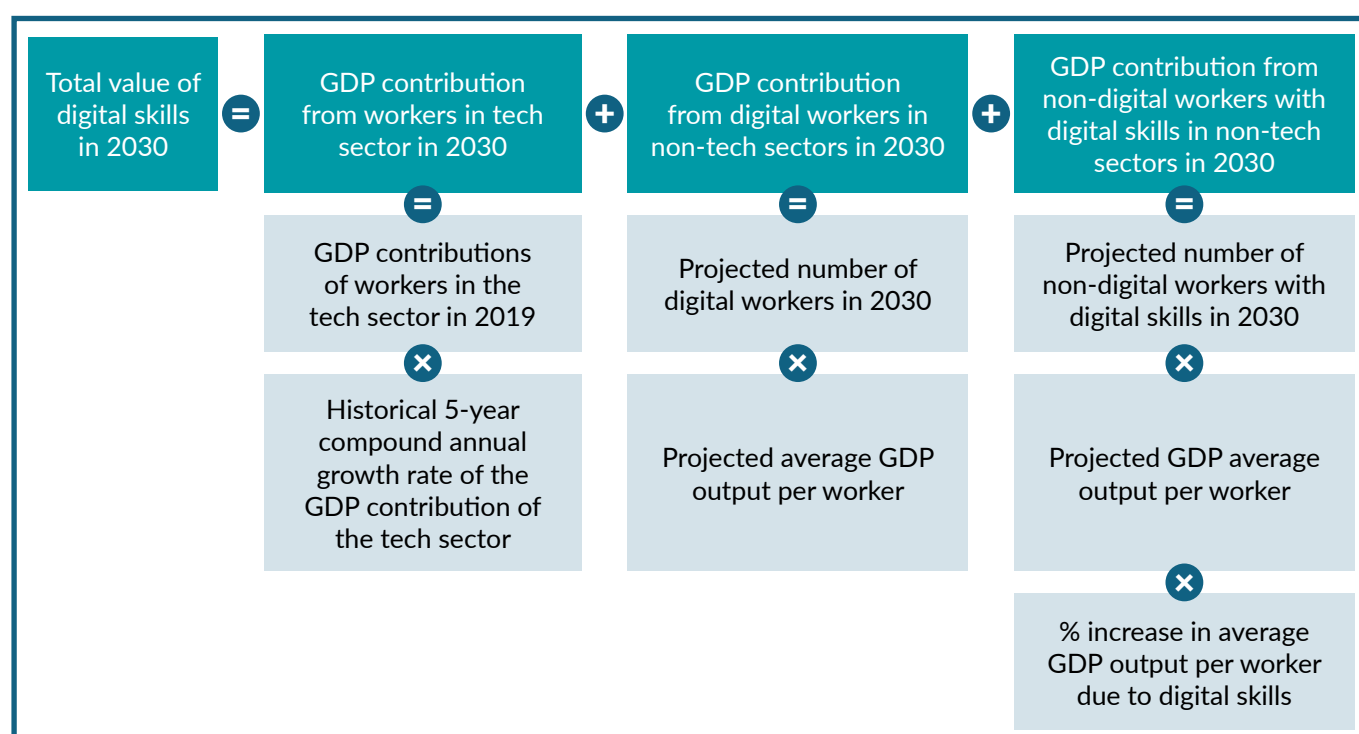
THE “OPPORTUNITY GAP” REFERS TO THE ADDITIONAL ECONOMIC VALUE THAT COULD BE UNLOCKED BY EXPANDING INDONESIA’S DIGITAL SKILLS BASE



SOURCE: AlphaBeta analysis

EXHIBIT A4:

THE VALUE OF DIGITAL SKILLS IN 2030 UNDER THE “BUSINESS-AS-USUAL” SCENARIO WAS ESTIMATED BASED ON CURRENT EMPLOYMENT AND DIGITAL SKILLS TRENDS



SOURCE: AlphaBeta analysis

EXHIBIT A5:

TO DERIVE THE VALUE UNDER THE “ACCELERATED” SCENARIO IN 2030, INDONESIA IS ASSUMED TO MATCH THE PERFORMANCE OF GLOBAL LEADERS FOR DIGITAL SKILLS

	SELECT GLOBAL LEADER OF COMPARABLE SIZE ¹	ASSUME INDONESIA CATCHES UP TO GLOBAL LEADER AND PROJECT 2030 VALUE
	Characteristic used to determine global leader	Calculation of Indonesia's 2030 'Accl.' scenario value
#1 GDP contribution from workers in tech sector	Highest share of GDP contribution from technology sector (Source: OECD) Global leader: United Kingdom ²	Assume Indonesia matches the United Kingdom's current tech sector share of GDP ² (Source: National statistics)
#2 GDP contribution from digital workers in non-tech sectors	Highest average share of businesses employing ICT specialists across non-tech sectors (Source: OECD) Global leader: United Kingdom ³	Assume number of digital workers in each of Indonesia's non-tech sectors grow to 2030 based on historical 5-year CAGR of number of ICT specialists in the United Kingdom ³ (Source: Eurostat)
#3 Incremental GDP contribution from non-digital workers in non-tech sectors through digital skills	Highest average share of workers who use computers regularly at work across non-tech sectors (Source: OECD) Global leader: Netherlands ⁴	Assume same share of workers with digital skills (i.e., use computers regularly) in each non-tech sector in Indonesia as in the Netherlands in 2030, and subtract respective shares of digital workers derived from #2 ⁴ (Source: OECD)

1. This refers to high-income countries with GDP size of at least 60% of Indonesia's GDP.

2. Of high-income countries with 2018 GDP size of 60% of Indonesia's in the OECD database, the UK has the highest share of GDP contribution coming from its ICT sector at 4.9% in 2018. In comparison, Indonesia's was 1.6%. Under the "Accelerated" scenario, Indonesia was assumed to exhibit the UK's current tech sector share of GDP contribution at 4.9% in 2030.

3. Of high-income countries with 2018 GDP size of 60% of Indonesia's in the OECD database, the UK has the highest average share of businesses employing ICT specialists across non-tech sectors at 29% in 2018. In comparison, Indonesia's was 1.9% in 2019 (based on job portal data; figure for Indonesia not available in the OECD database). Indonesia was assumed to exhibit the UK's historical 5-year growth rate in the number of digital workers at 3% per annum.

4. Of high-income countries with 2018 GDP size of 60% of Indonesia's in the OECD database, the Netherlands has the highest average share of workers who use computers regularly at work across non-tech sectors at 60.7% in 2017. In comparison, Indonesia's was 24.9% in 2019 (based on job portal data; figure for Indonesia not available in the OECD database). Indonesia was assumed to exhibit the same shares of digitally skilled workers in Sweden's non-tech sectors in 2018.

SOURCE: AlphaBeta analysis

B2. METHODOLOGY FOR SIZING THE VALUE OF GOOGLE'S PRODUCTS TO BUSINESS AND CONSUMERS

To estimate the business benefits, the economic value generated by businesses that use Google's products was calculated. These are in the form of productivity savings and revenue improvements. The Google products included in this analysis of business benefits include: Google Search and Google Ads, AdSense, and Google Play.

Estimating the consumer benefits supported by Google is a challenging task. This is because individuals typically do not have to pay for the Google products that they use. There are several established methodologies for estimating the benefits of free services, including consumer surplus based on the consumer's willingness to pay (how much an individual values a Google product) and value of time (how much time an individual saved by using a Google product). This report uses both methods. This report uses both methods. Primary data used in the analysis was collected from a consumer survey of 515 Internet users in Indonesia. This sample size is statistically significant based on Indonesia's online population, at a 95 percent confidence level (the level typically adopted by researchers). The survey was conducted online, which was deemed suitable given the intention to survey Internet users. The sample was also checked for its representativeness of Indonesia's Internet population based on demographic variables including age, income level, and the geographical location of respondents. In addition to the consumer survey, this research also leveraged big data gathering methods such as that used to determine the amount of time saved by using Google Maps for driving and public transport, as well as third-party sources. The Google products included in this analysis of consumer benefits include: Google Search, Google Maps, Google Drive and Google Play.

BUSINESS BENEFITS: METHODOLOGY AND DATA

The business benefits supported by Google are a proxy for the "gross economic activity" generated by Google, meaning the gross revenue, income or savings generated by businesses through the use of Google products. This gross economic activity does not measure the flow-on economic effects generated, such as further purchases from their suppliers or the economic activity generated by the employees of these businesses who spend their wages in the broader economy. Gross economic activity also does not account for activity that may have been displaced by Google and the methodology does not attempt to estimate the incremental impact of Google on the Indonesian economy beyond what would be the case if Google didn't exist but other companies like it did.

Google Search and Google Ads

The business benefits of Google Search and Google Ads were estimated using two methods – a top down approach and a bottom up approach. The top down approach estimated the total size of the search advertising segment in Indonesia and the proportion of this space that Google represents. The bottom up approach estimated the number of Google searches conducted in the country, the proportion of searches with advertisements, the number of advertisements per search, the average click-through rate (CTR), and the average cost-per-click (CPC).

To estimate the income generated by businesses paying for online advertising through Google a return on investment (ROI) ratio range of 3.4 – 8 was applied, and both estimates were reported.¹²⁹ This ROI ratio was developed from a few assumptions:

129. ROI reflects the net advertising benefits that businesses receive from online advertising (i.e. total revenue minus online advertising cost).

- Using a large sample of proprietary data, Hal Varian, Google's Chief Economist, estimated that businesses received US\$2 in revenue for every US\$1 spent on advertising. This finding was published in the American Economic Review in 2009.
- Businesses also receive free clicks because of unpaid Google Search. Using research published in the International Journal of Internet Marketing and Advertising in 2009 by Jansen and Spink, the Google US Economic Impact Study assumed that businesses receive five clicks for every click on a paid advertisement.
- Unpaid clicks are not considered as commercially valuable, so the US Economic Impact Study assumed their value at 70 percent of paid clicks.
- Because of these assumptions, an ROI ratio of 8 was estimated. This ROI ratio was taken as an upper bound. To derive a lower bound, we built on the academic findings detailed in the Google UK Economic Impact Study to set a lower bound of 3.4.

Table 1 shows the inputs and sources used for calculating the business benefits of Google Search and Google Ads.

AdSense

The direct business benefits from Google AdSense were estimated as the net advertising benefits generated by businesses placing advertisements on sites created by online content creators in the country, such as bloggers. We estimated this figure using Google's published global advertising revenue from Google network's websites and multiplied this by the country's share of global AdSense impressions.¹³⁰ In addition, we applied an ROI ratio, of the return that advertisers make using online advertising, derived from academic literature.

Table 2 shows the inputs and sources used for calculating the business benefits of AdSense.

Google Play

We estimated the revenue earned by developers from consumer spending on Google Play in Indonesia based on the number of applications downloaded from Google Play in the country and the average revenue received per application downloaded, and further multiplying this by the share of revenue that goes to developers. The revenue from consumer spending earned by developers was scaled up to include advertising revenue to arrive at the total revenue supported by Google Play in the country, using estimates for the distribution of revenue across consumer spending and ads.

Table 3 shows the inputs and sources used for calculating the business benefits of Google Play.

130. This methodology does not account for price differences across countries due to the lack of availability of reliable data on cost per impression by country.

TABLE 1: INPUTS AND SOURCES FOR CALCULATING BUSINESS BENEFITS OF GOOGLE SEARCH AND GOOGLE ADS

ESTIMATION	METRIC	SOURCE
Top down approach	Total market expenditure on search advertising	<ul style="list-style-type: none"> Statista (2020)¹³¹
	Google Search's traffic share	<ul style="list-style-type: none"> StatCounter (2019)¹³²
Bottom up approach	Google Search traffic data	<ul style="list-style-type: none"> AlphaBeta Consumer Survey (2019)
	% pages that display advertisements	<ul style="list-style-type: none"> Varian (2009)¹³³, Jansen & Spink (2009)¹³⁴ Deloitte (2015)¹³⁵
	Advertisements per page on average	<ul style="list-style-type: none"> Varian (2009)¹³⁶, Jansen & Spink (2009)¹³⁷ Deloitte (2015)¹³⁸
	CTR for Search (Estimate)	<ul style="list-style-type: none"> Word Stream (2019)¹³⁹ BannerTag (2019)¹⁴⁰
	Average CPC for Search (Estimate)	<ul style="list-style-type: none"> Word Stream (2018)¹⁴¹ Adstage (2019)¹⁴²
Both Methods	ROI ratio Lower and Upper Bound	<ul style="list-style-type: none"> Varian (2009)¹⁴³, Jansen & Spink (2009)¹⁴⁴ Deloitte (2015)¹⁴⁵

131. Statista (2020), "Search advertising – Indonesia". Available at: <https://www.statista.com/outlook/219/120/search-advertising/indonesia>

132. StatCounter (2019), "Search engine market share Indonesia".

Available at: <https://gs.statcounter.com/search-engine-market-share/all/indonesia/#yearly-2019-2019-bar>

133. Varian, H. R. (2009), "Online Ad Auctions". *The American Economic Review*, Vol. 99, No. 2, pp. 430-434.

134. Jansen, B. J., & Spink, A. (2009), "Investigating customer click through behaviour with integrated sponsored and non-sponsored results." *International Journal of Internet Marketing and Advertising*, Vol. 5, No. 1-2, pp. 74-94.

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143. Varian, H. R. (2009), "Online Ad Auctions". *The American Economic Review*, Vol. 99, No. 2, pp. 430-434.

144. Jansen, B. J., & Spink, A. (2009), "Investigating customer click through behaviour with integrated sponsored and non-sponsored results." *International Journal of Internet Marketing and Advertising*, Vol. 5, No. 1-2, pp. 74-94.

145. Deloitte (2015), *Google's Economic Impact United Kingdom*.

TABLE 2: INPUTS AND SOURCES FOR CALCULATING BUSINESS BENEFITS OF ADSENSE

METRIC	SOURCE
Advertising revenue from Google Network Member's websites	<ul style="list-style-type: none"> Alphabet (2019)¹⁴⁶
ROI from AdSense	<ul style="list-style-type: none"> Gupta et al. (2015)¹⁴⁷
Country share of global impressions on AdSense (Estimate)	<ul style="list-style-type: none"> DoubleClick (2012)¹⁴⁸ Internet World Stats (2019)¹⁴⁹

TABLE 3: INPUTS AND SOURCES FOR CALCULATING BUSINESS BENEFITS OF GOOGLE PLAY

METRIC	SOURCE
Global consumer spending on Google Play	<ul style="list-style-type: none"> Sensor Tower (2020)¹⁵⁰
Share of the spending that is paid out to app developers	<ul style="list-style-type: none"> Google (2020)¹⁵¹
Share of the spending that goes to the country's app developers	<ul style="list-style-type: none"> Caribou Digital (2016)¹⁵²
Distribution of mobile app revenue between consumer spending and ads	<ul style="list-style-type: none"> Appota/ AdSota (2017)¹⁵³

146. Alphabet (2019), Form 10-K for fiscal year ended December 31, 2019 - Submission to US SEC.

Available at: <https://www.sec.gov/Archives/edgar/data/1652044/000165204420000008/goog10-k2019.htm>

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149. Internet World Stats (2019). Available at: <https://www.internetworldstats.com/asia.htm>

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CONSUMER BENEFITS: METHODOLOGY AND DATA

The consumer benefits supported by Google are challenging to measure and calculate because individuals typically do not pay for the services. In the absence of price indicators, we adopted the economic “willingness to pay” principle to estimate the value of consumer benefits by asking individuals how much they value specific products – also known as consumer surplus. We also calculated the time savings accrued to consumers from their use of Google Maps (which optimizes their driving and public transport journeys) and Google Search (which increases the efficiency of information gathering).

Google Search

We estimated the benefits of Google Search to consumers using two metrics: consumer surplus and time savings.

To calculate the consumer surplus for Google Search, we multiplied the number of Google Search users with the average willingness to pay obtained from the consumer survey.

To calculate time savings, we applied time saving estimates from an experiment that measured the time taken to conduct a search online versus a search at the library.¹⁵⁴ This study found that a search that takes 21 minutes in the library takes 7 minutes online. After accounting for the fact that people now ask more questions due to the ease of online search, we estimated the time saved across Indonesia by using Google Search.

Table 4 shows the inputs and sources used for calculating the consumer benefits of Google Search.

Google Maps

We sized the benefits of Google Maps to consumers using willingness to pay, where consumers were asked

to value their favorite online maps service. We also estimated the time saved by using Google Maps for driving and public transport.

To calculate the consumer surplus for Google Maps, we multiplied the number of Google Maps users with the average willingness to pay obtained from the consumer survey.

The time saved per user by using Google Maps was estimated using the amount of time saved per trip, the average trip time, and the number of trips conducted per user. The time saving per trip was obtained from AlphaBeta’s traffic crawler analysis of thousands of driving and public transport trips in Jakarta in 2016.

Table 5 shows the inputs and sources used for calculating the consumer benefits of Google Maps.

Google Drive

We calculated the benefits of Google Drive to consumers using willingness to pay, where consumers were asked to value their favorite online cloud-based file storage service. Results from the survey of Indonesian online population were used.

Table 6 shows the inputs and sources used for calculating the consumer benefits of Google Drive.

Google Play

We calculated the benefits of Google Play to consumers using willingness to pay, where consumers were asked to value their favorite online distribution platform for digital products. Results from the survey of Indonesian online population were used.

Table 7 shows the inputs and sources used for calculating the consumer benefits of Google Play.

154. Chen et al. (2014) A day without a search engine: an experimental study of online and offline searches. *Experimental Economics*, Vol 17, Issue 4, pp 512-536.

TABLE 4: INPUTS AND SOURCES FOR CALCULATING CONSUMER BENEFITS OF GOOGLE SEARCH

ESTIMATION	METRIC	SOURCE
Consumer surplus	Amount that consumers value product per year (WTP)	• AlphaBeta Consumer Survey (2019)
	Online Population (OP)	• Internet World Stats (2019) ¹⁵⁵
	Google Search users as % of OP	• AlphaBeta Consumer Survey (2019)
Time saved per user	Time saved per search	• Varian (Presentation 2014) ¹⁵⁶ • Chen et al. (2014) ¹⁵⁷
	Average daily searches per user	• AlphaBeta Consumer Survey (2019)

TABLE 5: INPUTS AND SOURCES FOR CALCULATING CONSUMER BENEFITS OF GOOGLE MAPS

ESTIMATION	METRIC	SOURCE
Consumer surplus	Amount that consumers value product per year (WTP)	• AlphaBeta Consumer Survey (2019)
	Online Population (OP)	• Internet World Stats (2019) ¹⁵⁸
	Google Search users as % of OP	• AlphaBeta Consumer Survey (2019)
Time saved per user by using Google Maps for public transport	% of time saved per trip on average	• AlphaBeta traffic crawler analysis (2016)
	Trips per week	• AlphaBeta Consumer Survey (2019)
	Average trip time	• AlphaBeta Consumer Survey (2016)
Time saved per user by using Google Maps for driving	% of time saved per trip on average	• AlphaBeta traffic crawler analysis (2016)
	Trips per week	• AlphaBeta Consumer Survey (2019)
	Average trip time	• AlphaBeta Consumer Survey (2016)

155. Internet World Stats (2019). Available at: <https://www.internetworldstats.com/asia.htm#id>

156. Hal Varian (2014), "Economic value of Google" (Presentation).

Available at: <http://cdn.oreillystatic.com/en/assets/1/event/57/The%20Economic%20Impact%20of%20Google%20Presentation.pdf>

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158. Internet World Stats (2019). Available at: <https://www.internetworldstats.com/asia.htm#id>

TABLE 6: INPUTS AND SOURCES FOR CALCULATING CONSUMER BENEFITS OF GOOGLE DRIVE

ESTIMATION	METRIC	SOURCE
Consumer surplus	Amount that consumers value product per year (WTP)	• AlphaBeta Consumer Survey (2019)
	Online Population (OP)	• Internet World Stats (2019) ¹⁵⁹
	Google Drive users as % of OP	• AlphaBeta Consumer Survey (2019)

TABLE 7: INPUTS AND SOURCES FOR CALCULATING CONSUMER BENEFITS OF GOOGLE PLAY

ESTIMATION	METRIC	SOURCE
Consumer surplus	Amount that consumers value product per year (WTP)	• AlphaBeta Consumer Survey (2019)
	Online Population (OP)	• Internet World Stats (2019) ¹⁶⁰
	Google Play users as % of OP	• AlphaBeta Consumer Survey (2019)

159. Internet World Stats (2019). Available at: <https://www.internetworldstats.com/asia.htm#id>

160. Internet World Stats (2019). Available at: <https://www.internetworldstats.com/asia.htm#id>



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The amounts in this report are estimated in both Indonesian rupiah and US dollars. The conversion is based on the average exchange rate between January and September 2020, sourced from X-Rates, which was 1 USD = 14,615.63 IDR.



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