

GCI and study methods

Q1: Why is Huawei releasing GCI?

A1: More and more countries are realizing that the era of the digital economy is here. If we do not actively embrace it and seize the opportunities presented by the transition, then we will miss out on the dividends made possible by the development of the digital economy. How countries decide to benchmark against the patterns of global digital development and identify gaps in their digital economic development will determine to what extent they are able to seize the coming opportunities. With all of this in mind, Huawei began investing in research in 2014, and has released a GCI report every year since that time. The company continually explores how ICT technology innovation and applications can drive the development of economies, and actively pursues open cooperation in the study of the digital economy with renowned universities, think tanks, and industry associations. The aim of these efforts is to provide an authoritative, objective, and quantitative assessment of how countries and industries are progressing with digital transformation.

Q2: What is unique about the GCI?

A2: Huawei has developed a unique research model for the GCI comprising 40 indicators that can be analyzed in terms of four economic pillars and five technology enablers. Based on these 40 indicators, the GCI fully and objectively measures, analyzes, and forecasts the tracked economies; quantifies the digital transformation journey they're undergoing; and provides a reference tool for policy makers. The four economic pillars are ICT Supply, Demand, Experience, and Potential. The five technology enablers are broadband, data centers, cloud, big data, and the Internet of Things (IoT). In addition, the GCI also provides the following value to policymakers:

(1) Based on broad data sample collection and analysis, the GCI assesses the progress of national digital economies against objectives to be reached by 2020. This future-oriented analysis allows countries that are at the leading edge of digitization to gain further insight into the space for future development.

(2) The indicators used to support the GCI measurement of digital economies include commonly used broadband technologies, as well as data centers, cloud, big data, and the Internet of Things (IoT). This can provide policymakers with suggestions for mid- to long-term investment.

(3) The definitions and boundaries of the digital economy have yet to be standardized across the industry, and it is difficult to specifically quantify its size. The GCI employs a metric analysis method that combines digital technology and digital applications, arranging 79 countries into three groups based on their GCI scores and GDP per capita: Starters, Adopters and Frontrunners. This provides a picture of progress in digitization of national economies, and allows countries to see where they stand in terms of digitization as well as their strengths and weaknesses.

Now in its fifth year of development, the GCI report has become an authoritative benchmark for the assessment of digital transformation. It has won the recognition of the industry and has been cited by more than 30 authoritative agencies, including third-party organizations (G20, APEC, GSMA, etc.). In addition, countries including Sweden,

Singapore, Russia, and Saudi Arabia have referred to the GCI report when developing their digital strategy.

Q3: What changes have been made in the GCI 2018 study model and assessment method?

A3: GCI 2018 continues to use the four economic pillars and five technology enablers as a methodology model. Having been used for four years, the model provides robust support for data analysis, key findings, and decision-making recommendations. Consistency in the methodology of the study across years is conducive to supporting the accumulation of data. The ongoing enrichment of comparative analysis and assessment of the data can also provide policymakers with a good reference for their decision-making.

To meet the growing user's demand for expanding the scope of the GCI report, this year, GCI broadened its research scope from 50 to 79 countries, marking the second time it has enlarged its purview since 2015. We included the 79 countries into the study scope based on distribution of the world population, each country's GDP, characteristics of each country's digital development, and availability of data. The countries assessed by the GCI 2018 account for 95 percent of global GDP and 84% of the world's population. In addition, to understand what progress the 79 countries have made over the past few years, we retrieved historical GCI data for all countries stretching back to 2015. Users can find the performance of each country over the past four years on the GCI 2018 website so that they can benchmark their country's digital development against that of others to assess gaps, and develop their national ICT development plans.

Q4: How would GCI continue to extend its study of the digital economy?

A4: In order to continually improve the breadth of data around GCI indicators, and to strengthen the objectivity of study findings, the GCI research team pursues open cooperation with think tanks, scholars, and industry players around the world. The team also plans to extend the scope of research from countries to industries, looking at the influence of ICT infrastructure investment and enabled applications on digital transformation of industries across countries.

In 2017, Huawei partnered with Oxford Economics to release a report titled *Digital Spillover – Measuring the true impact of the digital economy*. This report defines the digital economy and explains its measurement method. Readers can also find the digital value of 50 economies, and the long-term impact of continuous investment and development of ICT infrastructure. Please visit the GCI 2018 website to learn more about the *Digital Spillover* report.

Key findings of GCI 2018:

Key finding 1: AI is redefining the concept of connectivity, opening the door to a new cycle of economic growth.

Industries are embedding AI in five key enabling technologies – Broadband, Data Centers, Cloud, Big Data, and IoT, to turn basic connectivity into Intelligent Connectivity and unleash innovation vitality to propel a new wave of economic growth.

Intelligent Connectivity will permeate our lives, allowing ICT infrastructure to create value not only for consumers but also for vertical industries. The digital economy will become an integral part of every industry. It is estimated that by 2025, industries will be well on their way to full digitization. Advanced economies will reach the stage of intelligent innovation and lead the world into a new cycle of economic growth. If countries across the world actively deploy AI, the economic value could nearly double to US\$23 trillion by 2025, up from US\$12.9 trillion in 2017 (accounting for 17.1% of global GDP).

Key finding 2: Though the level of digitization across the world is continuously improving, the digital divide between countries at different stages of digital transformation is widening. In 2018, this inequality continues to grow.

In 2017, the GCI identified a trend of growing inequality it termed the Matthew Effect, which described how Frontrunners see ICT infrastructure investment benefits compound over time to position them as unassailable leaders. In 2018, that digital divide the Matthew Effect described continues to grow.

Compared with the average scores of GCI 2015, Starters saw an average increase of 2.4 points, Adopters saw an average increase of 5.2 points, and Frontrunners saw an average increase of 6 points. Looking at the score, we can see that Frontrunners are growing faster than Adopters and Starters, meaning that the imbalanced development between the three types of countries is becoming more pronounced.

However, this year's GCI also has positive news for Adopters and Starters. As AI evolves into a general-purpose technology, new economic potential awaits countries in all three clusters. Whether one looks at addressing stagnating growth for Frontrunners or the limited resources available to Starters, redefining what "connectivity" looks like and steering the focus towards Intelligent Connectivity can help all countries progress and unlock new growth.

Key finding 3: Intelligent Connectivity will trigger unprecedented large-scale innovation and drive the expansion of the digital economy.

Intelligent Connectivity will trigger unprecedented large-scale innovation. New business models and applications arising from Intelligent Connectivity will change the way businesses are run, and how products and services are consumed. It will also spur the growth of the digital economy, pushing the value of this economy to US\$23 trillion.

Manufacturing is expected to be one of the main beneficiaries of Intelligent Connectivity. In terms of the digital economy, integrating Intelligent Connectivity with traditional manufacturing industries is forecast to produce an additional market value of \$6.4 trillion by 2025. By leveraging intelligent technologies, traditional industries will be well-poised to maximize their digital spillover and contribute more to the digital economy as a whole.

Sectors like ICT, professional services, and finance are expected to prosper in the digital economy, with additional market growth of \$5 trillion, \$3 trillion and \$1.7 trillion, respectively. Industries such as social and personal services, retail, transportation and utilities are also on track to achieve digital transformation accelerated by Intelligent Connectivity.

Key finding 4: AI is positioned to contribute to the success of the digital economy. To deploy AI on a large scale, countries need to simultaneously develop three equally important components: computing power, labeled data, and algorithms.

The study discovered that to deploy AI on a large scale, countries need to simultaneously develop three equally important components: computing power, labeled data, and algorithms. Since Frontrunners possess more mature ICT infrastructure, they outperform Adopters and Starters in all three components.

The big challenge for all three GCI clusters is scarcity of AI talent. AI will define the future workplace, so governments need to think about the future of education in their respective countries, and start to build a healthy, collaborative, and open AI ecosystem to attract and retain competitive AI talent.

Key finding 5: The top five countries on the GCI 2018 ranking are the US, Singapore, Sweden, Switzerland, and the UK. The only change in the top five countries in the 2018 GCI rankings was the UK, whose large-scale deployment of ICT infrastructure pushed it into the top five.

Key finding 6: Compared with GCI 2017, the top three movers in this year's rankings were Egypt, China and Slovenia.

Key finding 7: Amongst emerging markets, the Philippines and Egypt made impressive progress. The GCI score of the Philippines increased from 34 to 35, pushing the country to become an Adopter from a Starter. For Egypt, its mobile broadband subscribers increase from 38% to 62% of the population, boosting the country's GCI score close to 35 points which is a tipping point for Starter countries to turn into Adopter countries. The efforts Egypt has made allow it to jump to the top of the Starter cluster.

Where can I find more information?

For more information about the GCI, please visit:

<http://www.huawei.com/minisite/gci/en/>

Please download the GCI Report from the website. You can browse by country to learn more about the performance of specific countries in digital economy development. You can also search by year to compare against benchmark countries (the system supports comparison of up to three countries at a time), to assess respective strengths and weaknesses.

If you have any questions or suggestions, please feel free to contact the GCI

Project Team at hwgci@huawei.com.