**Question: Internet Connectivity and Lifelong Learning**

**Extract 4: Benefits of the Internet**

The internet is a pervasive, fundamental part of daily life that continues to deliver massive economic and social benefits around the world. Yet some 3.9 billion people – more than 52% of the world’s population – are still not online. Although much progress has been made in closing the digital divide, the challenge remains huge, complex and multidimensional. Multiple studies by The Boston Consulting Group have detailed the internet’s macroeconomic benefits to Gross Domestic Product (GDP), the broad economic and job impact of the digital economy’s rapid growth in online retail and advertising and infrastructure, and the big impact of information and communications technology (ICT) on small-business revenue growth and job creation. Most studies have verified the positive impact of greater broadband penetration on the growth in GDP. One of the first, by the World Bank, concluded that every 10 percentage point improvement in broadband penetration increases GDP by 1.3%.

Research also highlights a positive relationship between the application of digital technologies and the quality of life. Some researchers have considered internet usage including social networking sites as one type of leisure activities. The internet is also increasingly a source of high-quality educational content and online courses, which can increase the availability of formal instruction to underserved population segments. Already a fixture in developed nations, educational institutions and for-profit universities are expanding their online offerings in emerging countries, where rapid economic growth has increased the demand for skilled workers.

Source: World Economic Forum, *White Paper: Internet for All*, April 2016

# Extract 5: Singapore, Sweden top the Global Inclusive Internet Index

# Singapore and Sweden lead the world in terms of internet inclusivity, according to a recent report. The Inclusive Internet Index measures how effectively individual countries have adopted internet usage and the benefits derived from it. Device innovation, technological advances and declining prices afford increased connectivity; yet prices are still quoted as one of the key barriers to access in developing economies. Also prominent, among other reasons, is the proportion of those who do not use the internet because they do not see the need and lack knowledge of how to use it. The Singapore government will roll out a series of new courses targeted at the elderly, covering topics from the use of e-payment, chat apps and digital government services, in an expansion of the official Silver Infocomm Initiative, which has promoted IT literacy among more than 130,000 seniors.

# The availability aspect primarily entails ease of access to the internet. Singapore tops the availability rankings, owing largely to initiatives taken by the government. For example, the report says that Singapore is “arguably a standard-bearer” of public-access Wi-Fi which provides free internet access in public areas and now reportedly has more than 10,000 hotspots across the city. Internet access remains unaffordable for most income groups in many developing countries. The United Nations-defined threshold for affordability is 5 percent of average national monthly income and efforts are underway to reduce it to 2 percent. By 2016, 106 countries had reached the target of offering basic fixed-broadband services at less than 5% of monthly Gross National Income (GNI) per capita. In Singapore, while fibre broadband prices have dropped drastically, there are various programmes in place to ensure that vulnerable segments of the community can enjoy the benefits of the internet.

# Source: [www.edb.gov.sg](http://www.edb.gov.sg), 12 April 2017 and *The Straits Times*, 2 June 2018

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# Table 3: Prices of fixed-broadband services of selected economies in 2016

|  |  |  |  |
| --- | --- | --- | --- |
| Economy | as % of GNI per capita | USD | PPP$ |
| United Kingdom | 0.22 | 8.10 | 7.55 |
| Norway | 0.5 | 39.17 | 32.35 |
| Singapore  | 0.5 | 21.64 | 25.02 |
| United States | 0.82 | 38.10 | 38.10 |
| Sweden | 0.89 | 43.10 | 39.50 |
| China | 2.42 | 15.95 | 27.73 |

# Source: *International Telecommunication Union*

**Extract 6: Higher learning institutes to train more adults**

A major revamp of how working adults are trained for the new economy is under way, with more courses, more funding and a more significant role for Singapore's institutes of higher learning (IHLs). The Ministry of Education (MOE) is pumping in $70 million towards this effort over the next three years, with IHLs expected to spend $40 million a year on the SkillsFuture Series by 2020, compared to less than $5 million now. For a start, each institute will focus on one of eight emerging areas of growth. They include data analytics, finance and entrepreneurship. The programmes will be delivered as short modules, making them easier for working adults to take. They will be subsidised up to 70 per cent for Singaporeans and permanent residents. The rest of the fee can be paid using the $500 SkillsFuture credit given to every Singaporean above the age of 25 from last year onwards.

Education Minister (Higher Education and Skills) Ong Ye Kung said funding levels for programmes with coursework components that are "purely academic" in nature will have to be relooked, while coursework that could be vocation-based could be delivered in a bite-sized format that can be accumulated and lead to graduate certifications. Some of the universities, such as Singapore Management University (SMU), are already doing this. SMU Academy, the university's lifelong learning unit, will be offering financial technology modules that can be "stacked up" towards a Master of IT in Business. The MOE noted that having such courses will give them exposure to an area of interest without having to pursue a full degree.

Although micro-credentials can be used to provide “a milestone for adult learners to aim towards and which employers can recognise”, Mr Ong cautioned that it should not become a new “arms race” to collect credentials. “IHLs should instead focus on imparting skills and knowledge needed by industry, and package them into a nice bundle that represents a meaningful upgrading of skills and knowhow,” he said. “Learners too, should focus on picking up what is necessary for their upgrading.”

Source: *The Straits Times*, 29 October 2017

**Extract 7: Education, infrastructure and fiscal sustainability vital to Singapore’s future**

While cohort sizes may be falling and money “may be tight”, Singapore is ploughing more investments into education which “has, and must, continue to be the backbone” in the Republic’s economic strategy, said Minister in Prime Minister’s Office Chan Chun Sing. Noting that it is no longer just about providing Singaporeans with 10 years of compulsory schooling but a “lifetime of continuing education”, Mr Chan also cited the need to continue investing “seriously” in infrastructure for the next generation while maintaining the country’s long-term fiscal sustainability and discipline.

Mr Chan referred to the 2018 Budget and pointed out that the Government has “not slowed down” its investment in education. “Instead, we are strengthening our investment,” he said. He stressed that beyond the formal school system, new ways must be developed to “continuously train and retrain our people for tomorrow’s economy”. Adding that going back to school for long courses “is a luxury that few can have in today’s fast-paced economy”.

From 2019, foreign students will no longer receive subsidies for most of the vocation-based master’s degrees and post-graduate diplomas offered by the autonomous universities, while the subsidies for permanent residents (PRs) will be reduced. Changes in subsidies will generate S$25 million in savings annually that will be channelled to support shorter, industry-relevant modular courses for Singaporeans and PRs at both undergraduate and post-graduate levels.

A history professor at the National University of Singapore noted that foreign students make up more than 50 per cent of the students in his class as "locals are not interested to pursue postgraduate studies. If there is a fall in the number of international students, then some faculty members might not see the need to improve the quality of lessons. This could eventually affect our standing in the global rankings," he added.

Noting that unsubsidised postgraduate courses attract many students, the MOE expects such students "will continue to take up courses at our autonomous universities if they see value in the education and training offered".

Source: *The Straits Times*, 5 March 2018

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| **Questions** |
| **(a)** | **With reference to Table 3:** |
|  | **(i)** | Explain what could be inferred from the difference in values between prices of fixed broadband services in USD and PPP$ for Singapore. [2] |
|  | **(ii)** | Explain the difference between using GNI per capita and GDP per capita as an indicator of affordability of internet access. [2] |
| **(b)** | Using the information in Extract 4, explain how the internet would affect standard of living. [4] |
| **(c**  | Explain the increase in the investment in the field of education would lead to growth of the economy. (7)(d) Identify the factors that would undermine the economy from achieving the aims of the government (8) |
|  |  |
|  |  |
|  | [Total: 25] |

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| **(a)** | **With reference to Table 3:** |
|  | **(i)** | Explain what could be inferred from the difference in values between prices of fixed broadband services in USD and PPP$ for Singapore. [2] |
|  |  | *Singapore: Prices of fixed broadband services is 21.64USD but 25.02PPP$**\*Note there is no difference between USD and PPP$ for USA.* *Inference:** + *SG dollar is undervalued relative to US$ in terms of relative purchasing power [1m]*
	+ *The underlying reason is COL in SG is lower relative to US [1m]*
 |
|  | **(ii)** | Explain the difference between using GNI per capita and GDP per capita as an indicator of affordability of internet access. [2] |
|  |  | *Given that GNI = GDP + NFIA* *where NFIA = net factor income from abroad = wages, interest, profits and dividends from abroad* *1m for accurate definitions/ highlighting the difference accurately* *GNI includes income derived by residents from output produced anywhere in the world WHILE GDP measures only factor incomes received by residents from ownership of resources located within the country [1m]\***1m for link to affordability as below**Using GNI per capita as an indicator of affordability of internet access considers the rising number of residents working or investing abroad and having their incomes sent home which may be a more accurate representation of income in today’s globalised world and could better indicate affordability as compared to using GDP per capita [1m]* |
| **b** | Using the information in Extract 4, explain how the internet would affect standard of living. [4] |
|  | *Positive impact on material SOL [2m]**Ext 4: internet’s macro benefits to GDP…* *Every 10 percentage point improvement in broadband penetration increases GDP by 1.3%**Analysis: Internet spurs growth in on-line retailing and advertising and hence boosts C and I leading to increase in AD and GDP levels (AD-AS analysis not required; as long as there’s some explanation and link to material SOL e.g. in terms of amount of goods & services available for consumption)**🡪 raise RGDP per capita, cp**🡪 raise material SOL**Positive impact on intangible or non-material SOL [2m]**Ext 4: Research also highlights a positive relationship between the application of digital technologies and the quality of life. Some researchers have considered Internet usage including social networking sites as one type of leisure activities**Analysis: The availability on the internet of social networking as a form of leisure and high quality on-line educational courses which improves skills and literacy levels enables the average resident to enjoy a better quality of life**🡪 raise non-material SOL* |

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| --- | --- |
| **(c**  | Explain the increase in the investment in the field of education would lead to growth of the economy. (7)(d) Identify the factors that would undermine the economy from achieving the aims of the government (8) |

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