Digital Lives

Meaningful Connections for the Next 3 Billion

Executive summary

Pathways for Prosperity Commission
Technology & Inclusive Development

Blavatnik School of Government
University of Oxford

Cover Image, 12 year old Lakshita
looks at her phone, Udaipur, Rajasthan, India.
Photograph, Ishan Tankha,
Pathways Commission 2018.

Inforgraphics by Click Consult | www.click.co.uk

Report design by Soapbox | www.soapbox.co.uk

FOREWORD

This report is guided by two central truths. The first is that digital technologies are rapidly revolutionising almost every aspect of life as we know it. The second is that access to these technologies is not equally available to all people.

Women, people living in poverty, and rural communities often find themselves on the wrong side of a dangerous digital divide. Unless we are deliberate about empowering these already marginalised groups to participate in our increasingly digital economies, societies and political systems, new digital opportunities may only magnify inequality and exclusion.

As co-chairs of the Pathways for Prosperity Commission on Technology and Inclusive Development, we are proud to be working with a talented and diverse group of commissioners from government, the private sector and academia. Hosted and managed by Oxford University's Blavatnik School of Government, the Commission aims to catalyse a new dialogue and encourage country-led solutions to make frontier technologies work for all.

To ensure the next three billion people are included in the promise of a digitally-enhanced future, we urge anyone with a stake in this – citizen or cabinet minister, entrepreneur or corporation – to focus action on four priorities:

- Urgently connect the poorest and other excluded groups to digital infrastructure;
- Address the fundamental barriers that prevent take-up and effective usage, including social discrimination and educational hurdles;
- Encourage a vibrant digital ecosystem of innovative entrepreneurs and businesses; and
- Ensure that the most vulnerable are empowered in demanding transparent and trustworthy digital services.

While we are aware of the potential perils of this moment, we are fundamentally optimistic about the role technology can play in driving progress toward a more equal world. We hope that this report – and the stories it highlights – contribute to a necessary conversation about ensuring the promises of the digital age extend to everyone.

Melinda Gates **Sri Mulyani Indrawati** **Strive Masiyiwa**

ACKNOWLEDGEMENTS

The co-chairs and commissioners would like to extend their thanks and acknowledge the dedicated people that made this report possible. It was drafted by a team led by Commission academic directors Professor Stefan Dercon and Professor Benno Ndulu, and the secretariat's head of research and policy, Toby Phillips. Invaluable contributions to this report were made by the Pathways secretariat headed by Rafat Al-Akhali, with research and policy officers Sophie Ochmann and Tebello Qhotsokoane, and head of communications and events, Meena Bhandari. The report's production was supported by communications and events officer Philippa King and assistant Emily Cracknell. A team of researchers also supported the process: Pieter Sayer, Brendan Kilpatrick, Fairoz Ahmed, Christopher Eleftheriades, and Daniel Cheong. Special thanks go to Eleanor Shawcross Wolfson. The team greatly benefited from the advice of Dean Ngaire Woods, of the Blavatnik School of Government, University of Oxford, together with the faculty and staff.

For their helpful and stimulating conversations, the team would particularly like to thank Chris Locke, Jonathan Donner, Shankar Maruwada, Pramod Varma, John Norris, and the people who participated in our workshops on financial technology (Nairobi), digital ID (New Delhi), e-government (Oxford and Abuja), and education technology (New Delhi).

The breadth of this report was made possible through a number of partnerships and collaborations. Financial Inclusion Insights shared with us their full 2017 survey dataset across seven countries, which forms the basis of several insights about access and usage. Chapter W, an NGO based in Singapore and Indonesia helped coordinate field interviews in West Nusa Tenggara, Indonesia. The UNICEF Innocenti Research Centre shared unpublished analysis on Ghanaian youth's access to and usage of the internet (more insights from this will be published separately). And digital finance company TALA (the CEO of which is a Pathways for Prosperity commissioner) shared aggregated data from their work in the Philippines, Mexico, Tanzania and Kenya.

Finally, the depth of the report is thanks in part to independent research and analysis conducted for the Commission by Jenny Aker, Jonathan Greenacre, Alina Rocha Menocal, Priya Jaisinghani Vora, Kay McGowan, Matthew Homer, Jonathan Dolan, Olly Buston, Matthew Fenech, Nika Strukelj, Philip Roessler, Sigfried Eisenmeier, Chris Paton and Naomi Muinga.

ABOUT THE PATHWAYS COMMISSION

The Pathways for Prosperity Commission on Technology and Inclusive Development is proud to work with a talented and diverse group of commissioners who are global leaders from government, the private sector and academia.

Hosted and managed by Oxford University's Blavatnik School of Government, the Commission collaborates with international development partners, developing country governments, private sector leaders, emerging entrepreneurs and civil society.

The Commission aims to catalyse new conversations and to encourage the co-design of country-level solutions aimed at making frontier technologies work for the benefit of the world's poorest and most marginalised men and women.

Pathways Commissioners:

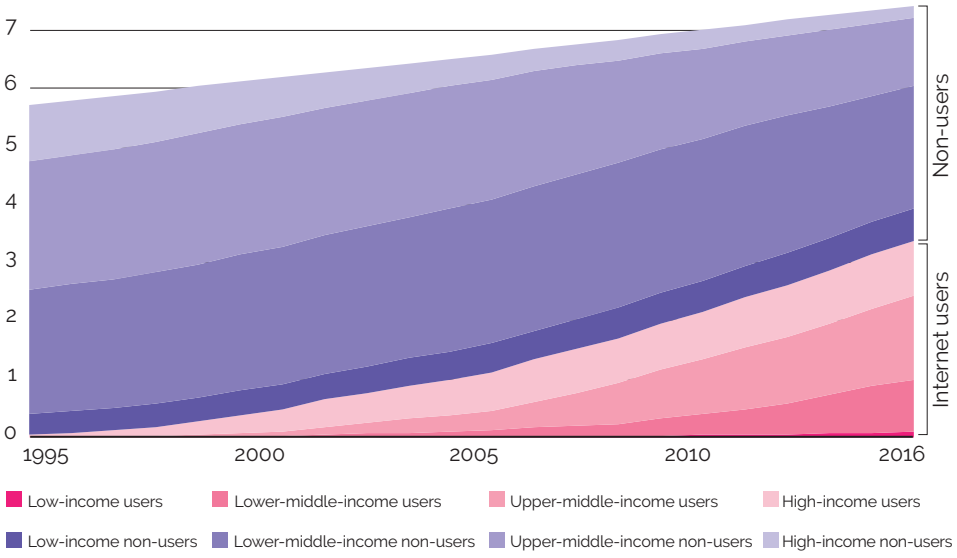
- Melinda Gates – Co-chair of the Bill & Melinda Gates Foundation
- Sri Mulyani Indrawati – Minister of Finance in Indonesia
- Strive Masiyiwa – Founder and Executive Chairman of Econet Group
- Professor Stefan Dercon – Professor of Economic Policy at the Blavatnik School of Government and the Economics Department, and a Fellow of Jesus College. Director of the Centre for the Study of African Economies
- Professor Benno Ndulu – former Governor of the Central Bank of Tanzania
- Dr Kamal Bhattacharya – CEO of Mojochat
- Shanta Devarajan – Senior Director for Development Economics and Acting Chief Economist at the World Bank
- Sigrid Kaag – Minister for Foreign Trade and Development Cooperation in the Netherlands
- Nadiem Makarim – CEO and Founder of GO-JEK
- Maria Ramos – Chief Executive Officer of Absa Group Limited
- Daniela Rus – Andrew (1956) and Erna Viterbi Professor of Electrical Engineering and Computer Science, and Director of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT
- Shivani Siroya – Founder and CEO of TALA

EXECUTIVE SUMMARY

Digital services are connecting people in developing countries to knowledge, jobs, businesses, their governments and to other people. Digital platforms have connected more than a million self-employed motorbike drivers in Indonesia to customers, and allow Indian citizens to safely and instantly report bribery. Simple SMS reminders are improving the quality of treatment and thereby health outcomes for people living with HIV in Nigeria, Cameroon and Brazil.[1] There has been great progress over recent decades in expanding networks – with 80% of the population covered across even low-income countries. Yet barriers to access remain considerable. Despite the expansion of cellular networks, Figure ES1 shows that less than 12% of the population in low-income countries use the internet. But even at current growth rates, three billion people in developing countries will not be using the internet by 2023. There is still much work to realise the great potential of digital access.

Figure ES1. **Internet users and non-users by their country's income class**

Population in billions of people



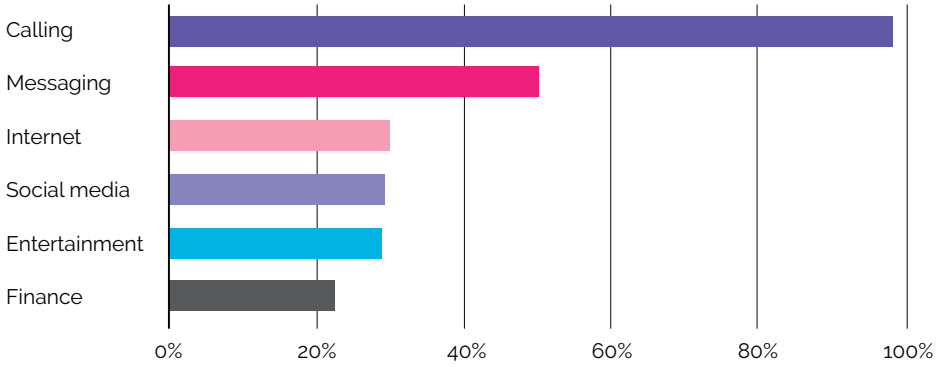
Source: ITU (2018) ICT Indicators Database, Pathways Commission analysis.

Note: country groups are based on income status in 2016; these categories are for the total population, including children and infants.

Impact is ultimately determined by usage; access alone is not sufficient. The global debate focuses significant attention on access – closing the infrastructure gap and connecting the unconnected. But we find that the gap in usage among those who have a connection is equally problematic; only a minority of people in developing countries actually use digital services. Figure ES2 illustrates levels of digital experience across seven countries in Africa and South Asia. Almost everyone has made a phone call at some point in their lives, but usage drops off rapidly for more complex digital functions. Even the most rudimentary of digital services, such as SMS, are not being used by the majority of people.

Figure ES2. **People do not take advantage of all the available functions on a digital device**

Percentage of people in developing countries who have ever used specific digital functions



Source: Financial Inclusion Insights (2017), Pathways Commission analysis.

Note: These are average numbers from a dataset covering Kenya, Tanzania, Uganda, Nigeria, Bangladesh, Pakistan and India.

Digital exclusion – both in terms of access and effective usage – is not random; it mirrors, and risks exacerbating, long-established inequalities. People with limited education, women, and those in poverty are the least likely to benefit from digital technology. In Pakistan, women are half as likely as men to own a phone. People without secondary education are less than a third as likely to have used the internet than the rest of the population.[2] Even for those who do own a phone, or who have used the internet, the inequalities persist in terms of the *amount* of usage. **Marginalised people use functions like messaging and the internet less often and less intensively than the general population.** This is driven by a number of factors: lower-educated groups are excluded due to a lack of basic literacy or digital skills, women are excluded by restrictive social norms, people who live in rural areas can be excluded due to limited infrastructure. Unless these fundamental barriers are addressed, the marginalised will remain excluded from the benefits of a fulfilled digital life.

The choices made by businesses and governments will shape digital access and usage. Digital architectures – the choices made by businesses and government and the ecosystem that emerges – are the fundamental background forces that shape the types of digital lives available. Major components of this are business models and pricing. Connecting people in poverty is predominantly a matter of affordability, but the business-as-usual approach – setting prices to recover infrastructure investment – will never be affordable for the poorest in society.

Indeed, the challenge for access is less about the "last mile" – over 80% of the world's population, including those in poverty, live near cell towers – **and more about finding business models or technologies that make it profitable to serve the lowest-income consumers.** This could be in the form of public funding – as in Indonesia where government and private investors are joining forces to connect the archipelago with a 13,000-kilometre fibre optic network. There are also initiatives like CSquared, a partnership involving the International Finance Corporation and Google to finance wholesale network construction. Or, it could be a cross-subsidy between customers, where businesses like Facebook and Jio have provided data for free or at low prices by cross-subsidising lower-income customers with revenues from other parts of the business. In some countries this cross-subsidisation is mandated by government regulation, such as placing statutory obligations on providers to reach a certain proportion of the population.

These projects are succeeding in getting infrastructure on the ground or temporarily boosting access along limited dimensions, **but networks still need to cover their costs, and these subsidies do not seem sustainable in the long term.** In the absence of new business models, or significantly lower-cost technologies, driving access to the poorest may require trade-offs that lead to lower-quality digital services – such as public WiFi hotspots or "edge-of-the-network" caching of content for offline access.[3] These products provide limited windows of access to digital services. While they are no substitute for real access, they may be one of the only ways to get digital content into the hands of people in poverty.

Looking beyond the price of digital services, the design of these services will also influence user behaviour. Today, an increasingly large component of communication between individuals takes place across digital platforms where the algorithms behind these platforms frequently influence who can see what, or if they see it at all. More than half of all mobile traffic in Kenya is mediated through apps owned by Facebook and Google;[4] the algorithms that run these apps are biased towards shareable or engaging content, and they have potentially substantial power to shape people's digital lives. This can influence personal matters such as individual relationships or an online hustle for work. But, it can also influence major events, such as civil strife in Venezuela or ethnic and religious violence in Myanmar, Sri Lanka and India. There is no perfect model for digital service design, but it is incumbent upon business, government and citizens to contribute to shape this digital architecture. Connection is not valuable in and of itself; so, the question becomes, what are people being connected to?

Ideally, people would be connected to a rich offering of digital services that are locally relevant and contribute meaning and benefit to the user's life. This requires the private sector and government to foster a broad ecosystem, investing in the "soft infrastructure" of integrated and interoperable services – such as digital identification or payment systems – that can deepen and diversify ecosystems. These building blocks provide a platform for innovation, and will make services more efficient and so more affordable for low-income customers. For example, the Government of India has already made huge investments in soft infrastructure, allowing third-party digital service providers to authenticate documents or verify user identity. This increases functionality of other apps and decreases the cost of developing locally relevant digital products.

Finally, government, the private sector and civil society must establish the rules and norms that shape digital architectures. Different governments are taking vastly different approaches to the question of what data should be allowed to flow across a network. At one end of the spectrum is what some call "China's great firewall", at the other end are countries that legislate "net neutrality" to outlaw any form of content filtering or moderating. Few developing countries have a clear approach to this foundational question of digital governance, and even fewer, if any, have a clear approach to regulating digital design and user protection. Digital lives are increasingly mediated through algorithms and servers, and the risk of abuse or unintended harm is real. While many regulatory remedies have been proposed, from data portability to a legal "data fiduciary duty" for data holders, this seems to be an instance where policy responses are lagging behind practice. Indeed, **this might be an opportunity where business and civil society can take the lead in developing trustworthy and transparent digital services.** This may be less about rule-setting and more about norm-setting; such as the recent Ethical OS toolkit developed to help product developers think through the implications of their design choices.[5] Nudging the design of digital services in a pro-user direction should lead to richer digital lives for all.

The challenge ahead is clear: connect the next three billion users to a positive, productive and fulfilling digital life. From the analysis described above, and detailed in this report, there are four areas where action is needed. Everyone can contribute to realising these priorities – citizen or cabinet minister, entrepreneur or corporation.

1. Drive access to the poorest and those facing exclusion, by investing in hard infrastructure and developing new business models.
2. Address the fundamental barriers that prevent take-up and effective usage, by addressing restrictive social norms and investing in basic and digital education.
3. Encourage innovation and a dynamic ecosystem of digital services, by building soft infrastructure and sensible regulatory frameworks.
4. Push for transparent and trustworthy digital services, by empowering users to understand and control their digital lives.

Now is the time to create the digital architectures for the future. Digital technologies offer such great promise to transform economies and societies, creating new opportunities for better service delivery in health, education and social protection, connecting people to loved ones, providing new pathways for economic growth and opening up new jobs and livelihoods. But, without concerted action to encourage inclusive access and effective usage, they will only entrench inequalities and leave marginalised people even further behind.

Pathways for Prosperity Commission

Technology & Inclusive Development

BLAVATNIK SCHOOL OF GOVERNMENT

UNIVERSITY OF OXFORD