2022

daughters of tomorrow
Empowering Women, Enabling Families

Digital Divide In-Focus

An in-depth look into the digital exclusion faced by lower-income women in the world's most digitally inclusive country

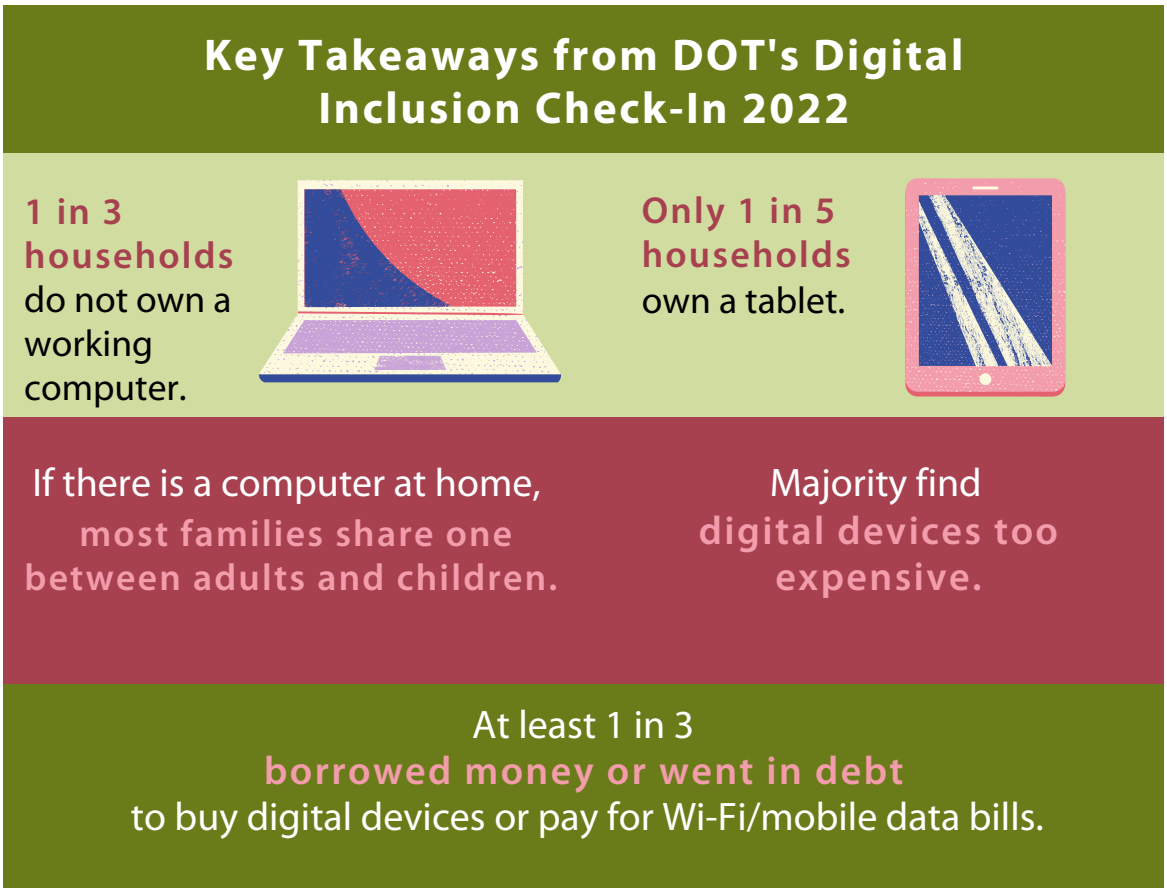
WHEN IT COMES TO technology and obtaining skills to use it, women from lower-income communities in Singapore face a world different than the average Singaporean. In 2021, Singapore once again made headlines by ranking at the top of the list for digital inclusiveness according to Roland Berger's Digital Inclusion Index.

In the same year, a survey conducted by South Central Family Service Centre found that of the households surveyed with children below the age of 18, 21% did not have access to the internet while 39% did not have either a laptop, PC, or tablet.

Across the world digital exclusion strikes women worse than men, especially when they already face poverty. This exclusion takes shape in various forms, both in access to digital devices and the internet, as well as what is known as the "secondary digital divide."

Indeed, as a developed nation, the digital divide in Singapore goes beyond the "haves and have nots," creating a gendered gap when it comes to internet-efficacy and time spent using the internet. Multi-layered barriers women from lower-income communities face contribute to their challenges in finding access to and being educated in effectively using computers and the internet.

Having assisted women who are in critical need of income opportunities on the ground for the past seven years, Daughters Of Tomorrow's (DOT) work highlights the importance of bridging this digital gap, as the way in which our beneficiaries struggle to partake in the contemporary digital life further pushes them into financial isolation. Alarmingly, an in-depth look at the issue also signals how this digital divide affects children and teenagers, potentially contributing to continued generational poverty amongst families from lower-income communities in Singapore. Indeed, experiences shared by DOT's beneficiaries suggest that the digital divide particularly challenges them in two ways: in accessing sustainable income opportunities and the academic stability of their children.

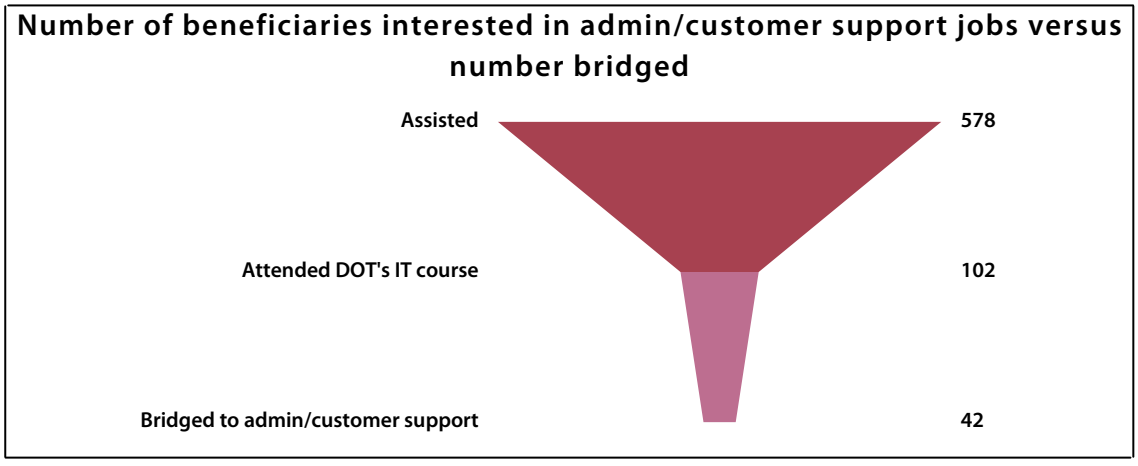


Digital Inclusion Check-In Survey, 2022

Digital efficacy and the potential to earn a living wage

LACK OF FUNDS TO access computers and the internet, as well as limited digital skills, force many mothers from lower-income communities into unemployment or under-employment. Most mothers, regardless of socio-economic background, aim to secure an employment opportunity that can be performed during office hours, as these hours coincide with when childcare centres operate. Since they are almost always the sole caregivers in their families, this rings particularly true for mothers from our demographic.

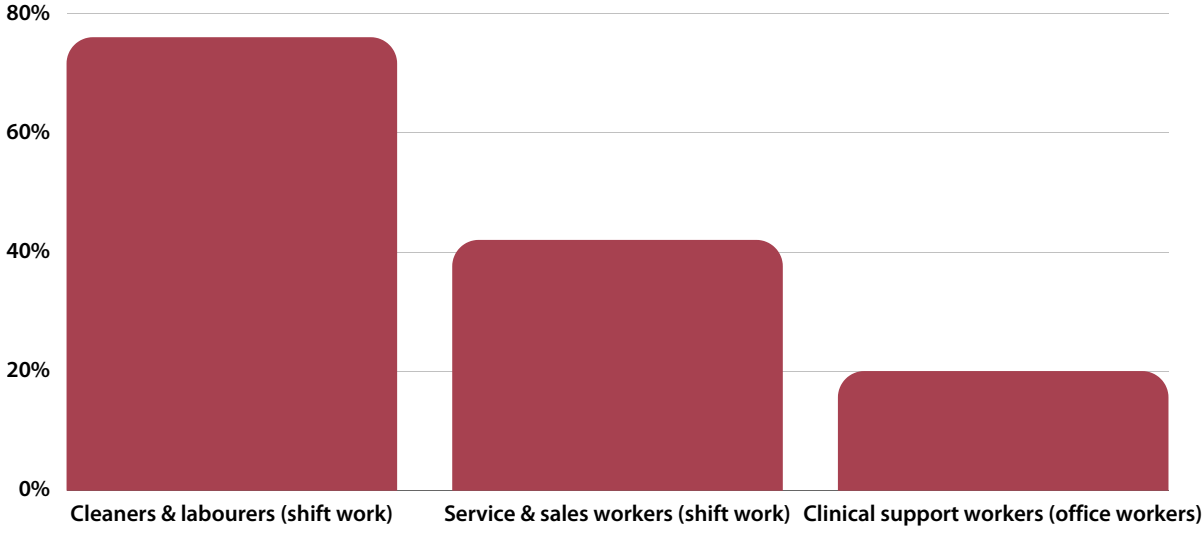
In reality, being unfamiliar with technology translates into an inability to obtain these coveted office jobs that could be attended during childcare centres' operating hours. Indeed, in the last five years, while hundreds of women assisted by DOT stated an interest in positions such as admin or customer support, only seven percent possessed or were able to obtain enough technical skills to be bridged into such positions, even though DOT regularly offers such vacancies, thanks to its many employer partners.



DOT internal data

Technical and internet-efficacy plays a vital role not only in securing the kind of employment that mothers from lower-income communities can attend, but also presents higher income opportunities. For mothers who can find alternative childcare solutions or return to the labour force as older children start formal education, lacking digital skills means earning less money.

Example: Occupations that mainly follow shift-work versus office hours and percentage of women earning less than $1500/month



Retrieved from Labour Force in Singapore 2020, Manpower Research and Statistics Department
Note: earnings by gross monthly income excluding employer CPF

While digital exclusion in Singapore is mostly understood through secondary divide terms, it must be emphasized for women who earn the least, access to digital devices and the internet is still an issue. The existence of this primary divide became particularly apparent when the Covid-19 global pandemic hit Singapore as jobs became remote and children switched to home-based-learning (HBL). Although DOT's IT program has always loaned computers to course-takers, in 2020 DOT had to step in and loan a

number of its general pool of beneficiaries either a computer, tablet, smartphone with data, or Wi-Fi dongle to help relieve work-from-home and HBL needs. Even though the circuitbreaker ended in 2020, DOT had to continue loaning these devices in significant numbers in 2021.

Number of beneficiaries serviced versus number of beneficiaries who have taken a device loan from DOT

	Beneficiaries serviced	Devices loaned
2020	252	168
2021	250	101

DOT internal data

RECOMMENDATION: DIGITAL EDUCATION MUST BE PLANNED FROM AN EQUITY PERSPECTIVE

Based on more than 2500 referrals DOT has received in the last five years, women from lower-income communities rate their internet and e-mail skills as below average, signalling a great need for IT related training designed specifically for this demographic.

Although there are many free or subsidised education programs to further the digital skills of Singaporeans, as with other employability training, DOT finds that women in this group struggle to attend such courses. When it comes to digital skills training for adults, educators must focus on

supplementing curriculum to ensure digital equity, as is done in DOT's IT course. Aside from following topics and methods specifically designed for its beneficiaries, DOT's IT course aims to level the field for all its students by offering them a laptop and a Wi-Fi dongle on loan. Additionally, such education programs geared towards women from lower-income communities must keep in mind that most mothers from this demographic are the sole caregivers in their families, as such, offering free childminding services would directly contribute to higher attendance rates.

RECOMMENDATION: INCREASE LEARNING SUPPORT TO LOWER-INCOME ADULTS UNDER THE SMART NATION INITIATIVE

Launched in 2014 with the objective of making Singapore world's first "digital-first" country, the Smart Nation Initiative has reshaped the way in which Singaporeans conduct their day-to-day lives with the involvement of technology. Campaigns carefully curated to achieve such a large-scale goal included many digital learning and access programs, including those geared towards lower-income communities such as the Infocomm Media Development Authority's (IMDA) Home Access and NEU PC Plus programs.

Hoping to build upon the successful campaigns run under the Smart Nation initiative, DOT recommends the expansion of free and accessible digital learning programs to further include lower-income adults. Similar to the in-person and one-on-one support given to seniors under

schemes such as the SG Digital Community Hubs where Digital Ambassadors assist seniors over the age of 60 in learning digital skills, DOT believes programs that enable learning at an individual's own pace and schedule will greatly help close the digital gap faced by women from lower-income communities.

Children and the poverty cycle

SINCE THE LATE 1980S, social service professionals, researchers, and educators across the world have been interested in the effects of access to technology, or the lack thereof, on children. Countless studies across the globe, including a growing body of longitudinal studies, suggest a link between home computer use, access to the internet, and academic scores, even after controlling income and other factors.

In the context of lower-income families in Singapore, the existing digital gap faced by children further widened when Covid-19 forced schools to adapt to HBL.

> "Last year I didn't have a computer, but my daughter asked me to borrow one. DOT gave me a laptop. I need it for my children, for their online classes, for them to do their school things. For me, I don't need a computer because I'm not confident, but for my children I need it."
>
> "Once during home-based learning, I did not manage to pay the broadband bill on time and they suspended the service. My kids didn't manage to complete their HBL for that week."

Responses from DOT's Digital Inclusion Check-In, 2022
Note: Edited for clarity.

Indeed, ownership of personal computers or tablets and access to the internet are crucial for successful HBL outcomes. As the pandemic continues to force students into hybrid education models, the need for students to improve their digital skills and engage with the internet becomes more crucial than ever - even in a near-future when Singapore returns to "normalcy." As academic performance and growing up in poverty have been shown to have direct consequences on future poverty, the issue of digital exclusion and academic stability of children must be given special attention in aiding families break the poverty cycle.

RECOMMENDATION: EXPAND DIGITAL ACCESS PROGRAMS FOR CHILDREN

DOT commends the Ministry of Education's (MOE) recent efforts in creating a digitally inclusive learning environment for secondary students via the Personalised Digital Learning Program (PDLD), which equips secondary students with a tablet. In an effort to help Singaporeans pay for these devices, the program includes a one-time Edusave top-up of $200, while allowing schools to offer further financial assistance to families that cannot afford to pay for the rest of the quantum. On this subject, DOT would like to recommend MOE to implement automatic financial assistance for the purchase of such devices for families under ComCare assistance. This automatic system will not only help already “application-fatigued” parents to avoid red tape, but would also benefit schools in terms of reducing paperwork related to such assistance.

Following the success of the PDLD, DOT would also like to recommend that the program be expanded to include primary school students, as children of this age are equally expected to continue their online education under hybrid education models. Moreover, DOT believes the program should ensure stable internet access of students, by automatically offering families from lower-income communities either Wi-Fi dongles or subsidised broadband connectivity.

Conclusion

IN RECENT YEARS Singapore has made an impressive headway on creating a digitally inclusive society by initiating public Wi-Fi programs, establishing digital skills training courses, as well as fostering a telecommunications market that offers affordable prices to access the internet. While this achievement is admirable, society at large, as well as policy makers, must be aware that the experiences of the least privileged in Singapore differ when it comes to digital inclusion. Further work must be done to ensure access to digital devices, training, and the internet is available to all members of our communities, particularly for the financial health of the next generation.

Alongside the recommendations proposed above, DOT would like to take this opportunity to invite relevant authorities to further include women from lower-income communities in the policy-making process. As individuals

facing multiple barriers in establishing financially stable lives are the very experts of the challenges they face, DOT believes including the know-how of lower-income communities would not only aide policymakers in their own learning, but will help in establishing initiatives that create sustainable and meaningful change.

References

Attewell, P. (2003). Beyond the digital divide. Disadvantaged teens and computer technologies, 15-34.

Chen, W., & Wellman, B. (2004). The Global Digital Divide - Within and between countries.

Cheong, P. H. (2007). Gender and perceived internet efficacy: Examining secondary digital divide issues in Singapore. Women's Studies in Communication, 30(2), 205–228.

Jackson, L. A., von Eye, A., Biocca, F. A., Barbatsis, G., Zhao, Y., & Fitzgerald, H. E. (2006). Does home internet use influence the academic performance of low-income children? Developmental Psychology, 42(3), 429–435.

Cohen Zilka, G. (2016). Reducing the digital divide among children who received desktop or hybrid computers for the home. Journal of Information Technology Education: Research, 15, 233–251.

Cooper, J. (2006). The digital divide: The special case of gender. Journal of Computer Assisted Learning, 22(5), 320–334.

Dolan, J. E. (2015). Splicing the divide: A review of research on the evolving digital divide among K–12 students. Journal of Research on Technology in Education, 48(1), 16–37.

Joiner, R., Stewart, C., & Beaney, C. (2015). Gender digital divide. The Wiley Handbook of Psychology, Technology, and Society, 74–88.

Li, Y., & Ranieri, M. (2013). Educational and social correlates of the digital divide for rural and Urban Children: A study on primary school students in a provincial city of China. Computers & Education, 60(1), 197–209.

Low, J., Dujacquler, D., & Kaur, S. (2021). Bridging the digital divide: Improving digital inclusion in Southeast Asia. Roland Berger. Retrieved from: https://www.rolandberger.com/publications/publication_pdf/roland_berger_sea_digital_inclusion.pdf.

Ministry Of Manpower. (2021). Labour Force in 2020. Ministry Of Manpower. Retrieved from: https://stats.mom.gov.sg/iMAS_PdfLibrary/mrsd_2020LabourfForce.pdf .

Ng, I. (2021). Why digital poverty deserves greater attention. Straits Times. Retrieved from: https://www.straitstimes.com/opinion/why-digital-poverty-deserves-greater-attention.

Ratcliffe, C. (2015). Child poverty and adult success. Brief, Urban Institute.

Wong, Y. C., Ho, K. M., Chen, H., Gu, D., & Zeng, Q. (2015). Digital Divide Challenges of children in low-income families: The case of Shanghai. Journal of Technology in Human Services, 33(1), 53–71.

Annex

DOT's Digital Inclusion Check-in Survey was held in January 2022 to further understand the current digital barriers faced by DOT beneficiaries and their families. 29 women completed the survey.