DIGITAL EMPOWERMENT FOUNDATION

Outcome Collection | April 2023

BUY-IN OVERVIEW

- Client: USAID/India and Indo Pacific Office, Digital Connectivity and Cybersecurity Partnership initiative (DCCP)
- Period of Performance: September 1, 2020 – February 28, 2023
- Budget: $313,132

Access to technology is unequal in India. Poor affordability, lack of infrastructure, limited awareness, cultural and social barriers, and insufficient government initiatives all hamper access to computers, mobile phones, and the Internet and contribute to a digital divide that disproportionately affects poor rural Indians, particularly women. Moreover, the COVID-19 pandemic exacerbated the digital divide and left the country's rural women entrepreneurs and women-led community development organizations (CDOs) behind.[1]

The Digital Sarthak program, implemented by the Digital Empowerment Foundation (DEF), bridges the gender digital divide in rural India. It empowers rural women entrepreneurs by increasing their digital literacy beyond basic communication and messaging and helps women-led CDOs take advantage of the growing digital economy. In the first phase of the program, the program staff trained hundreds of Digital Sarthaks, or "digital foot soldiers," in digital literacy, smartphone usage for business, media and information literacy, digital marketing, and ecommerce. In turn, these Digital Sarthaks trained women entrepreneurs and CDOs in their home districts in rural India.

- The program was initially rolled out in 2020 to ten districts in seven states across India, with ten Digital Sarthaks stationed in each district. They upskilled a total of 10,000 rural women entrepreneurs and 500 CDOs. Phase I of the program was an initial success, and in Phase II it was expanded to 27 districts in 13 states. Now, over 300 Digital Sarthaks participate in the program, training a total of 16,843 women entrepreneurs and 1,100 CDOs. Each Digital Sarthak also has the opportunity to open a center in their district to deliver digital services, providing rural women in their communities the opportunity to gain hands-on experience with technology and digital tools.
- The Digital Sarthak program is notable for three reasons. First, the program is the largest digital literacy intervention in the Digital Frontiers portfolio, and its scale has doubled over the course of implementation. Second, it is one of Digital Frontiers' longest-running digital literacy grants, and partners with a well-established implementer: DEF has two decades of experience in designing and implementing development programs focused on digital literacy. Finally, the program consistently emphasized collecting and disseminating high-quality data and evidence of impact, allowing the Monitoring, Evaluation, and Learning (MEL) team to describe the program's impact with precision.

---

1 A Community Development Organization (CDO) is a non-profit entity that works to improve the quality of life for individuals and communities. Women-led CDOs, also called women's self-help groups (SHGs), use a participatory development approach to address social, economic, and environmental issues. CDOs partner with government, businesses, and key local stakeholders to provide education and training programs, health and wellness initiatives, and economic development initiatives, among other services.

SUMMARY OF OUTCOMES:

1. **Rural women entrepreneurs' and CDO members' digital literacy increased.** While this change is not fully attributable to the Digital Sarthak intervention due to the digitizing pressure of the COVID-19 pandemic, nationwide participant surveys show that all participants increased their use of digital tools.
2. **Women entrepreneurs in the program expanded their businesses, enhancing them with sophisticated, efficient, and secure digital practices.** Four-fifths of participants' businesses increased their monthly revenue.
3. **More end-users became aware of digital government services, bridging last-mile gaps in rural and underserved communities.** Almost all participants applied for at least one more government initiative for themselves or on behalf of their business, family, or friends, and 96 percent of their applications were approved.

STUDY OVERVIEW

This study aims to identify robust outcomes that resulted from the South Asia Regional Digital Initiative (SARDI) buy-in's Digital Empowerment Foundation (DEF) activity. Through qualitative interviews at the grassroots level, analysis of project reports and documentation, and project-wide surveys, the evaluation team sought to answer three core questions:

1. What were the key achievements from the DEF activity?
2. How did the activity contribute to the identified outcomes, and what would have happened in the absence of the intervention?
3. What lessons were learned from producing these results?

INCREASING DIGITAL LITERACY

PROBLEM AND APPROACH

Indian women are 15 percent less likely to possess a mobile phone and 33 percent less likely to utilize mobile Internet services than Indian men.[2] Only one-third of Indian Internet users are women, and men predominate among users of more sophisticated services like web browsing, using smartphone cameras, and downloading and using apps. Overall, Indian Internet usage in rural areas is half that of urban areas. While the COVID-19 pandemic slashed women's ability to devote time to learning new digital skills, it also suddenly elevated those skills from supplementary abilities to an integral part of everyday life. As a result, the skills gap between urban and rural, rich and poor, and men and women have triply disadvantaged DEF program participants.

---

[2] https://www.oxfamindia.org/knowledgehub/workingpaper/india-inequality-report-2022-digital-divide

Women entrepreneurs were especially disadvantaged by crises in their personal lives stemming from the pandemic. These constraints made it effectively impossible to digitize business operations in a way that could increase their businesses' reach or grow their sales.

To tackle these inequalities, DEF implemented the Digital Sarthak program to offer interactive and practical in-person trainings in digital literacy, financial literacy, marketing, online safety, social media, e-commerce, and smartphone usage for business purposes to rural women entrepreneurs. The Digital Sarthaks themselves were trained and knowledgeable community members who received additional training and financial support from DEF. *Sarthak* in Hindi means "enabler"; Digital Sarthaks bridge the digital divide and empower women entrepreneurs to leverage digital platforms, tools, and knowledge to grow their businesses. These trainings were supplemented with hands-on mentorship and access to digital resource centers equipped with broadband Internet, desktop computers, and printers.

OUTCOME

Percentage of women entrepreneurs with digital financial skills
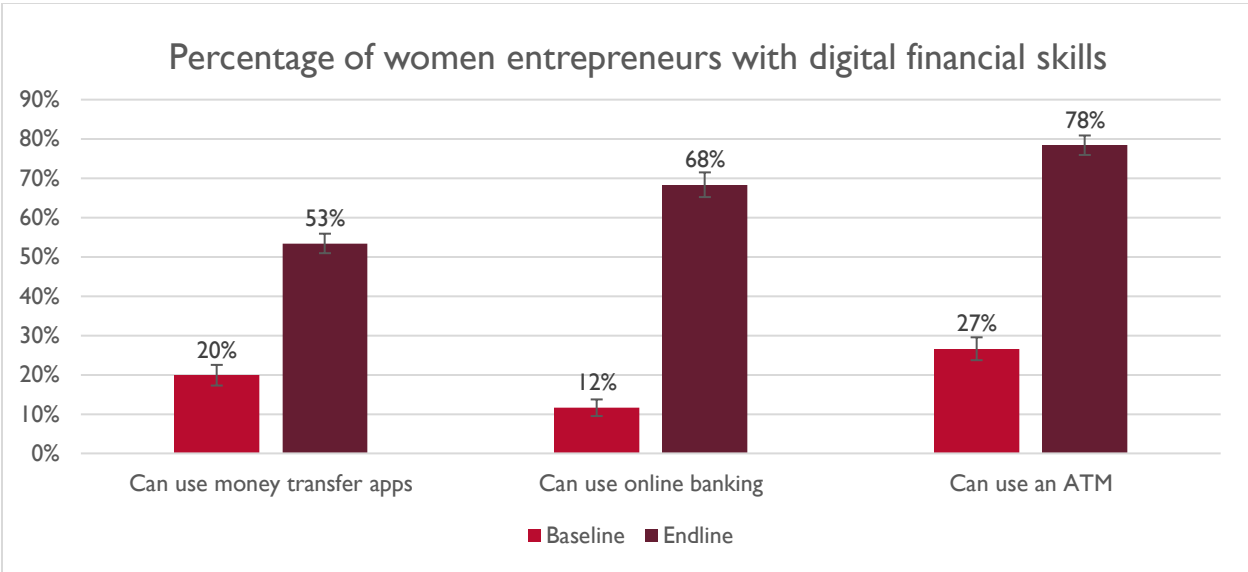
Note: Error bars display 99% confidence level (Exact Method).

Short- and medium-term data point to significant increases in digital literacy among the vast majority of program participants. The endline survey, a representative sample of participants taken in December 2022, found that over 85% of participants reported having learned how to use a smartphone during or between training sessions, and almost all credit their Digital Sarthak or another member of DEF's staff for helping them set up and use their devices. A minority, slightly more than one-tenth of respondents, knew how to use a smartphone before the training. DEF's usability survey, which records participants' changes in skills and attitudes immediately after training, corroborates these results; after training, virtually all participants were able to save a contact on their mobile phone, a sample skill indicating smartphone competency.

These results were also borne out by direct observation at project sites in West Bengal. All of the women entrepreneurs and Digital Sarthaks interviewed there showed significant skill in using their smartphones, including those who were unable to read; using icons and voice-to-text, they were able to navigate the Internet, find videos to watch on YouTube, and shop online.

While some loss of knowledge over time is to be expected, participants in the Digital Sarthak program exhibited the opposite phenomenon: their knowledge and use of digital skills grew and strengthened over time. Even after several months to a year after first receiving training, the participants who received help from their Digital Sarthaks in setting up their mobile phone had higher awareness of all of their phone's features and used them more often, including more advanced features such as posting and networking on social media apps.

While the participants increased their basic digital skills, they also showed sophistication in their awareness of cybersecurity threats. More than five in six women entrepreneur participants reported they believed they could identify fake news on digital platforms directly after training. About 30 percent of participants who Digital Sarthaks helped access the Internet verified online news sources to avoid mis- and disinformation, compared to 5 percent of participants who did not use their Digital Sarthaks for help accessing the Internet.

During interviews in West Bengal, many interviewees could recall the exact strategies the Digital Sarthaks taught to deal with fraud and scams. For example, when receiving a suspicious text or phone call regarding their bank accounts, they made sure to verify the matter in person at their bank branch before taking any action on the matter. DEF's West Bengal district coordinator reported while several of his friends had in the past been scammed online or through text or phone calls, not a single one of his training participants or Digital Sarthaks had fallen prey to any of these methods of fraud.

Photo: Robin Banerji for DAI

Before the Digital Sarthak center opened in the village of Jhanjha, West Bengal, the villagers would have to travel three kilometers to the next town to access the Grameen Bank, or over ten kilometers to the State Bank. To visit the State Bank, one would have to go 20 to 30 minutes by bicycle or pay ₹20 each way to use an autorickshaw. Now that a Digital Sarthak center has opened, offering digital financial services like a mobile ATM, they can withdraw money in the same village without having to spend money to travel, and their Digital Sarthak center is open until 10:00 pm. Even after the business closes, villagers can call their Digital Sarthak to withdraw money at any hour in case of emergency.

SIGNIFICANCE

Participants who have considerably increased their digital literacy reported three major additional effects from their involvement in DEF's Digital Sarthak program. First, Digital Sarthaks said they had increased their public standing in their home communities. All the Digital Sarthaks interviewed were answering calls and WhatsApp messages during their interviews, showing their increased centrality in social and business networks. Since the Sarthaks act as trusted advisors to women entrepreneurs and their families, they gain social and political capital in their communities. One interviewee boasted that before becoming a Digital Sarthak she was usually called by her first name, but she had now earned the honorific title *didi,* or "older sister," a term even community elders had begun to use for her as a mark of respect for her knowledge and expertise.

Second, women entrepreneurs reported increased independence and personal empowerment. Several of them noted that while their mobility had been relatively limited before the DEF intervention, they now regularly leave their houses for business or social matters. They use WhatsApp, Telegram, and other social platforms, including for news. These participants' quality of life and social power has increased due to access to digital tools, which has potential to further their political and economic empowerment.

Third, all participants said they benefitted from the conveniences of digital banking, including checking bank balances online, using ATMs to withdraw cash, and using online and mobile payments to perform business and personal transactions save the participants time and lower transactions costs. As a result, the participants are better equipped to participate fully in their local economies and save money that can be redirected to education, health, nutrition, sanitation, and other basic household needs. Importantly, participants also remarked they were now better equipped to deal with cyber threats while benefiting from the conveniences of digital banking.

CONTRIBUTION

DEF's interventions are directly responsible for the increases in digital literacy among the target population. With such a profound gender digital divide among this population, DEF's participants—poor, rural women—suffer from a lack of access to digital resources, with many of them unable to even develop a sufficient understanding of precisely which digital resources they do not have access to. Before training, approximately 10 percent of women entrepreneurs in the program had used the Internet, but there are major geographic outliers—in Uttar Pradesh, for instance, only 3 percent had used the Internet. These figures are ultimately unsurprising, given that only 31 percent of all rural Indian Internet users are women.[3] All of the participants interviewed said they had a general sense that, before DEF's intervention, no one in their direct networks understood how to use the Internet or how to use a mobile phone for any purposes besides taking and placing calls.

What would have happened in the absence of the intervention? In the absence of the Digital Sarthak program, digital literacy would be considerably lower among the training participants, their families, and their extended communities. DEF is one of the only players in the digital literacy space affecting the lives of rural women entrepreneurs in these areas; only 8 to 10 percent said they had

---

[3] https://publicpolicyindia.com/2022/05/03/overcoming-the-gender-gap-in-digital-connectivity/

benefited from any digital literacy training other than DEF's. Almost no respondents in Bihar and Uttar Pradesh, two of the most underserved states in the pilot, had experienced any digital literacy training other than DEF's.

What remains to be done? The impact of the Digital Sarthak program on digital literacy is unambiguous. However, it is as of yet unclear what knock-on effects, if any, the program can generate. In general, program participants were optimistic that they could use mobile phones and social media for their own purposes after training but were not confident of whether they would go on to teach digital skills to others. Interview participants in West Bengal were split on the impact of their businesses' digitalization: those who used digital resources saw their merits, but participants who had not yet used particular resources, like desktop computers, were reticent to begin. Moreover, their incomes were increasing so slowly that many felt that they would need additional infusions of cash and in-kind donations of digital resources like phones, tablets, computers, and printers in order to keep learning. This evidence points to a continued need for empowerment, if not direct training, as well as focused development on increasing incomes.

LESSONS LEARNED:

- **Training local leaders works.** A train-the-trainers approach to digital upskilling pairs two powerful engines of social change. On the one hand, it benefits from the knowledge and skills of professional subject-matter experts in pedagogy and cybersecurity. On the other, it harnesses the influence, context expertise, and social capital of local trainers—Digital Sarthaks—who can leverage existing relationships in their immediate vicinity.

  With preexisting trust and credibility, the Digital Sarthak program sidestepped a significant obstacle that similar interventions face when entering a new community: the front-loaded investment of time and demonstrations of goodwill that build rapport with prospective participants and ultimately enable the organization to begin programmatic work. The train-the-trainer model thus allowed DEF to scale the Digital Sarthak intervention fluidly and easily once they identified local champions—new Digital Sarthaks—who were willing to become spokespeople and ambassadors for the benefits of digital literacy.

- **Selection of influential champions is key**. DEF benefited from ideal local champions who were skillfully selected by district coordinators and national staff. While formal digital literacy trainings comprised the central offering from DEF to the local community, access to ongoing mentorship opportunities with Digital Sarthaks and free or low-cost digital resources ultimately supported and cemented participants' knowledge acquisition.

  Among the Digital Sarthaks interviewed, the most effective mentors shared first-hand experience with their mentees; they had been in the exact same situations as the training participants, so they could tailor their training to the lived experience of being a rural woman homemaker, a small business owner with children, or a student coming of age unfamiliar with digital technology. The Digital Sarthaks pulled from their own experiences to impart the strategies of personal empowerment that led to them becoming digitally literate.

DEF staff also demonstrated significant investment and commitment to recruiting potential Digital Sarthaks, CDO members, and women entrepreneur trainees. For example, the West Bengal district coordinator holds regular conversations with women entrepreneurs he encounters on his daily field visits to gauge their digital literacy, influence in their community, and willingness to join the project as a Digital Sarthak. Through extensive word-of-mouth networks and "mental rolodexes," he stays ready to flexibly expand the intervention to reach more women entrepreneurs when resources permit.

Photo: Robin Banerji for DAI

Children gather every evening near the Digital Sarthak center in Jhanjha, West Bengal, to play mobile games using the center's paid Wi-Fi service, which generates revenue for the Digital Sarthak as well as extending high-speed Internet connectivity to the community. Even though few villagers in Jhanjha use digital tools for business, many use smartphones for digital transactions, communication, and entertainment.

- **Scaffold interest and empowerment**. One Digital Sarthak in West Bengal, Mala Khatun, reported that when she began her work, many community members were skeptical that they could actually benefit from becoming digitally literate. They saw digital tools as irrelevant to their livelihoods and dismissed the possibility of using them for business purposes.

  While most of her community members are still not ready to seriously engage with digital resources for use in business, education, and finance, they currently enjoy watching YouTube videos for entertainment, playing mobile games, and shopping online. She encourages these activities and enables them by selling Wi-Fi from her Digital Sarthak center, and she also assists them with digital financial services. She sees these activities as a pathway to additional engagement with digital resources that will ultimately foster interest in using them for livelihood generation.

- **Search for unexpected bottlenecks.** Rapidly increasing digital literacy depends on a confluence of access to resources and an individual's desire to use them. However, cultural barriers are often more significant in preventing such access to digital resources than unavailability of Internet-enabled devices and digital infrastructure. For example, although DEF leadership has proudly worked to expand Internet connectivity in some regions of rural India, other parts such as West Bengal already have reliable mobile and Internet service, even in very rural, "inside" areas.

  During interviews, Digital Sarthaks often fielded WhatsApp and Telegram messages from their participants in West Bengal, who were messaging from their homes on their or their families' mobile devices. Also, when a newly operational Digital Sarthak center located inside a primary school in Nadia, West Bengal lacked a broadband connection, the school's teachers found a solution to help students with their schoolwork by connecting the Digital Sarthak center's computers to a 5G mobile hotspot.

With regards to cultural barriers that present unexpected barriers to digital literacy, several Digital Sarthaks described participants' inability to type in English, which forced trainers to teach voice dictation earlier. Also, Digital Sarthaks relayed accounts of women entrepreneurs being unable to persuade their husbands and male family members to allow them time to use the family's shared mobile phone.

- **Localize by using familiar language.** In West Bengal, the English phrases "cybercrime" and "digital threats" are poorly understood, as are their counterparts in the Bengali language. However, participants readily understand the threats posed by "hacking" and "fraud," which refer to all kinds of dangerous situations online, on social media, and on messaging apps. As local idioms often shape digital literacy within local understandings of the digital space, curriculum developers should work alongside members of the target audience—like Digital Sarthaks—to tailor lessons effectively for particular communities, as one size rarely fits all.

- **Set boundaries on support.** Enthusiastic and heavily invested Digital Sarthaks and women entrepreneurs sometimes demand significant resources, time, and effort from their mentors and supporters, like DEF field staff and district coordinators. DEF's West Bengal district coordinator, who supports the Digital Sarthak program statewide, often makes flexible requests of DEF's national staff for resources such as laptops, tablets, and laser printers, but sometimes these requests exceed the DEF structure's capacity to provide. In such cases, he is forced to make a choice whether to bankroll those resources from the revenue from his own Digital Sarthak center, which also generates income for his own livelihood, or to deny the requests.

Photo: Robin Banerji for DAI

During data collection, it was found that the coordinator exercised each of these options. In one instance, he provided a large family of weavers a desktop computer owing to their considerable investment and a strong business case, but in another case he refused to provide color printers to a Digital Sarthak center located near a school so that teachers could print materials in color for their students. Nonetheless, clear boundaries on what the project can fund and support would allow grassroots workers to improvise, innovate, and scale without resorting to self-funding.

West Bengal's DEF district coordinator declined to purchase color printers for a Digital Sarthak center located in a primary school that already had laser printers. He reasoned that, while the Sarthak wasn't able to currently afford to upgrade the center since it had only been in operation for less than a week, she would soon have enough revenue to purchase a color printer for her center on her own.

FOSTERING ENTREPRENEURSHIP

PROBLEM AND APPROACH

Micro, small, and medium enterprises (MSMEs) are the foundation of India's economy. Virtually all Indian MSMEs are women-owned microenterprises, and half of all microenterprises are located in rural areas. In 2021, income generated by MSMEs accounted for one-third of India's GDP and produced about half of the country's exported goods.[4] As such, the economic health of microenterprises is a major determinant of the health of India's entire economy.

However, the COVID-19 pandemic put MSMEs under threat. Overall, the Indian MSME segment's business volume has severely contracted, with more than a third of MSMEs going out of business since the pandemic began.

In response, DEF targeted women entrepreneurs for digital literacy interventions. Over 80 percent of baseline survey participants either owned a business or had a business in their family, and in those cases, most participants worked at the family business.
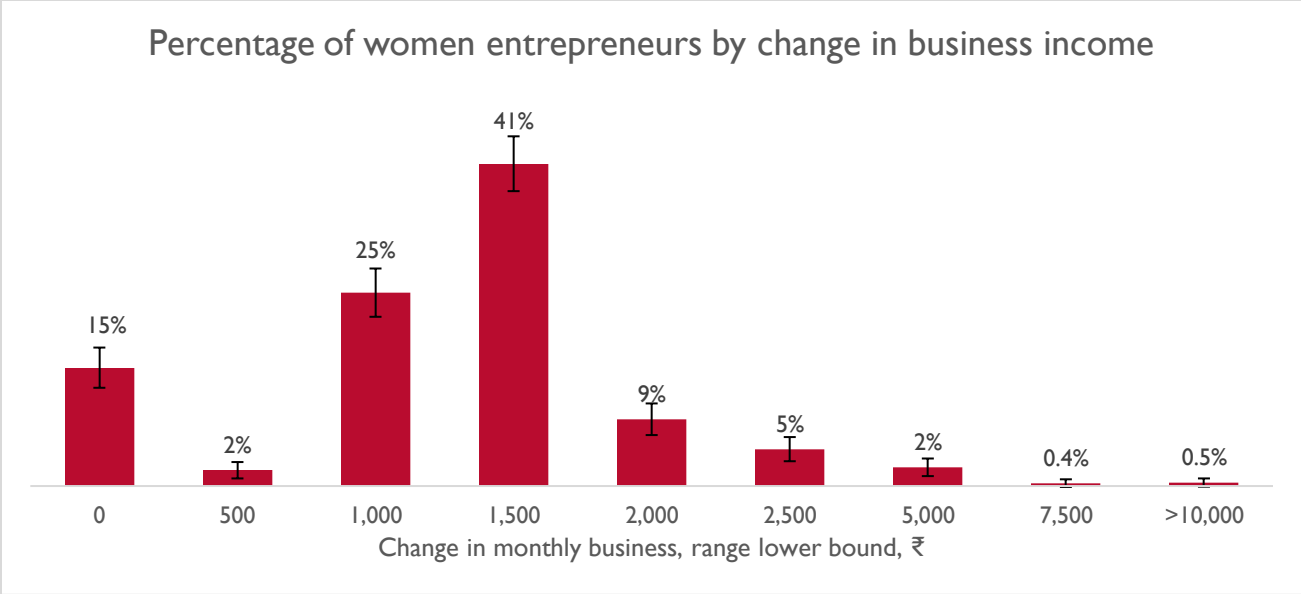
At baseline, only 12 percent of women entrepreneurs in the DEF program used the Internet to market or sell their products and 20 percent used social media for business. However, almost 90 percent of participants expected that digital upskilling could help make their work easier, and 95 percent believed that using the Internet would increase their sales. Virtually all surveyed participants reported eagerness to learn more about how the Digital Sarthak program could assist their business. Nonetheless, interviews with some Digital Sarthaks revealed that once the program began, participants became less enthusiastic about using digital skills for their businesses due to perceived high effort and time commitment compared to what they considered to be a low payoff.

Four out of eight training modules DEF disseminated were specifically designed to increase use of digital tools in the participants' businesses; these training modules that Digital Sarthaks presented focused explicitly on how entrepreneurs could use digital tools, including social networks, SMS and chat services, and online sales platforms to market and sell their products.

OUTCOME

Almost all program participants' businesses experienced dramatic increases in business revenue and product sales. By endline, 87 percent of women entrepreneurs reported having more customers than before training, and those new customers spent more than they used to. More than 80 percent of entrepreneurs' business incomes had increased by endline, from a reported $18-24 (1,500-2,000 rupees) per month on average.

---

[4] https://www.ibef.org/blogs/india-s-msme-sector

Percentage of women entrepreneurs by change in business income

Change in monthly business, range lower bound, ₹

Note: Error bars display 99% confidence level (Exact Method).

Digital Sarthaks also increased their earnings. Overall, 181 Digital Sarthaks generated $36,947 (30,39,435 rupees) from their Digital Sarthak centers. These centers are model businesses that women entrepreneurs aspire to, and the shared entrepreneurship experience between the Digital Sarthaks and other women entrepreneurs created a sense of camaraderie.

Business owners sustainably increased their digital skills. Module 2: "Smartphone for Business" taught skills that could be used for participants' entrepreneurial ventures, and the personal applicability of skills like downloading apps, web searching, and setting lock screen passwords led to virtually universal uptake. In particular, there was wide participant uptake for WhatsApp: Usability survey data showed that 50 percent more women entrepreneurs were able to set up WhatsApp accounts than use digital marketing platforms directly after training, even though the training included tutorials for both. As for digital marketing platforms, business owners tended to gravitate towards those that have also have personal uses: Facebook is the most popular marketing platform, with three times the usage of the next most-used platform, Google My Business.

Digital marketing and ecommerce were challenging skills for many participants to master. Digital marketing uptake was significantly lower in districts with lower rates of entrepreneurship. In interviews, Digital Sarthaks attributed the slow uptake of digital marketing and ecommerce to two factors: the difficulty of using digital marketing and ecommerce platforms and the relatively low payoff for entrepreneurs. However, the situation improved by the endline survey; on average, three-quarters of respondents had used digital marketing during the program, with states with lower entrepreneurship rates performing proportionately.
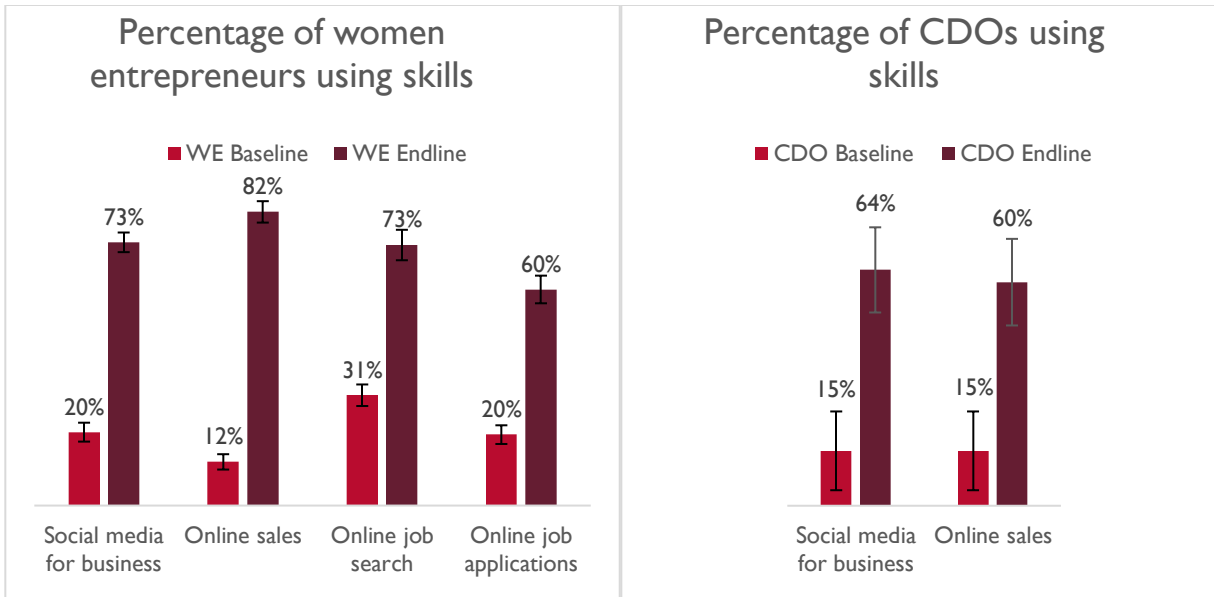
Photo: Robin Banerji for DAI

A family of weavers in Tatipara, West Bengal tried to use Amazon to market woven saris, circumventing middlemen who bought goods at below-market rates to resell them, but they found the process of using Amazon too burdensome to sustain. They were also disappointed that Amazon also took fees and commission out of their sale price. Instead, they pursued an alternative digital marketing approach: they take pictures of new merchandise and send them on WhatsApp to a group of customers with large networks, who then forward the posts to their friends. Thanks to this adapted marketing model, their business is expanding; they have built a new building to house an additional loom, which will be operated by a newly hired employee.

SIGNIFICANCE

Increases in businesses' reach through social media and messaging platforms has proven key to individuals' and households' livelihoods, but DEF's program also generated additional benefits, including increasing business efficiency and innovation. For example, several women in Nadia, West Bengal who operate small-scale tailoring businesses from their homes reported using YouTube to replicate and create new clothing patterns, allowing them to provide bespoke garment creation rather than merely offering alterations. One interviewee explained that, since she is illiterate, she used voice dictation to find YouTube videos that show how to sew blouses. Inspiration from those videos resulted in her creating new patterns freehand for several returning customers, who then spread the word using WhatsApp and brought in additional customers.

Crucially, the program ensured business continuity during periods of political and economic turbulence. Newfound access to customers, banks, and suppliers via WhatsApp, Telegram, Facebook, and mobile payment services enabled business owners to keep producing and earning income during government-mandated COVID lockdowns while helping limit contagion spread in their communities between and after lockdowns. Thus, the program averted income loss and interruption of business.

Percentage of women entrepreneurs using skills

Legend: ■ WE Baseline ■ WE Endline

- Social media for business: 20% (Baseline), 73% (Endline)
- Online sales: 12% (Baseline), 82% (Endline)
- Online job search: 31% (Baseline), 73% (Endline)
- Online job applications: 20% (Baseline), 60% (Endline)

Percentage of CDOs using skills

Legend: ■ CDO Baseline ■ CDO Endline

- Social media for business: 15% (Baseline), 64% (Endline)
- Online sales: 15% (Baseline), 60% (Endline)

Note: Error bars display 99% confidence level (Exact Method).

CONTRIBUTION

It is difficult to quantify the direct contribution of the Digital Sarthak program to businesses' increase in customers, sales, and revenue. Anecdotal data show that Digital Sarthaks who are provided with significant startup capital, including working premises, computers, printers, and smartphones are able to generate sufficient income to support themselves and, in some cases, expand their businesses without additional assistance. Moreover, 94 percent of usability survey participants said that Digital Sarthak training helps them expand their business and increase their income.

For example, one Digital Sarthak in Nadia, West Bengal was able to purchase her own laser printer through the funds she raised by operating her Digital Sarthak center. Meanwhile, DEF's district coordinator in West Bengal is using the proceeds from his Digital Sarthak center to fund construction of a new apartment above the center, and he plans to relocate his family to the apartment so that his wife can operate the center when he is visiting Digital Sarthaks in other parts of the state.

The program's baseline data comes with a caveat due to the COVID-19 pandemic; the data show that most women entrepreneurs' businesses were devastated by the pandemic, during which repeated lockdowns halted sales, severed business partnerships, made financial institutions inaccessible, and isolated women in their homes. The data further show that almost half of participants had fewer than ten days of savings, and one-fifth had no savings at all. As the program was building from such a low baseline, much of the observed progress in the form of increased sales and customers may simply be a return to pre-pandemic levels for some businesses.

Businesses that launched during the pandemic were able to take advantage of Indians' resumption of business. Mala Khatun, a Digital Sarthak in Jhanjha, West Bengal reported that her computer shop during and immediately following the first COVID lockdown had the highest rate of utilization, as her neighbors in the village booked train tickets and flights to help migrant workers return from Delhi, Kolkata, and Mumbai. She also received numerous requests for help withdrawing money electronically using her mobile ATM, since regular bank branches were in larger towns that had become unreachable because of reduced transportation. This unique state of the economy muddles the analytical process of attributing business growth to DEF's trainings.

What would have happened in the absence of the intervention? The COVID-19 pandemic forced Indians nationwide to digitize many aspects of their lives: 89 percent of respondents to a 2022 Deloitte study said that they were more willing to learn new digital or use new platforms compared to before the pandemic, and 85 percent said they were more comfortable engaging with digital technologies.[5]

Recent years have seen a rapid increase in digitization of payments across India. The number of transactions on India's digital Unified Payments Interface (UPI) has grown at an average of 160 percent per year since it was introduced in 2016; transactions doubled between June 2022 and the year previous.

Several Bengali interviewees noted that during the COVID-19 lockdowns, when children had to attend school via Zoom or Google Meet, many mothers sat with their children to observe their use of technology, which inspired them to later

Photo: Robin Banerji for DAI

The DAI survey team was able to purchase green coconuts and roasted corn from informal roadside vendors in Nadia, West Bengal cash-free, using mobile payment apps. The roasted corn vendor, who was unaffiliated with the Digital Sarthak intervention, said that he planned to install a UPI QR code to his business location on the bridge guardrail next to him to ease transaction speed.

become Digital Sarthaks. Without the intervention, these *didis* may have used government initiatives as an alternate information source, or sought private training in digital literacy and gone on to influence friends and relatives in their villages and larger social networks.

---

[5] https://www2.deloitte.com/content/dam/Deloitte/au/Documents/financial-services/deloitte-au-fs-aasb-17-external-audit-250722-new.pdf

In fact, these women may have had several other avenues for accessing these tools and skills in the Digital Sarthak program's absence, some of which—like the Central Government's National Digital Literacy Mission—are also implemented by DEF. Others include the landmark $300 million Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), which was launched three years before Digital Sarthak.

However, DEF is making the most impact along the lines of the gender digital divide. Notably, both the green coconut vendor and roasted corn vendor encountered by the DAI survey team were men. Owing to persistent divides in access to education, finances, and social capital, women are much less likely to be digitally literate compared to men in rural India. Thus, DEF's contribution to bridging the digital divide may be the most pronounced because it focuses on women.

What remains to be done? As business development is a cyclical process, additional work is needed to bring businesses at nascent stages of digitization to their full potential. This requires three distinct efforts: work at the intensive margin, at the extensive margin, and in sustaining current relationships.

At the intensive margin—that is, when enriching the work that has already been accomplished— entrepreneurs already participating in the Digital Sarthak intervention have not reached full adoption of digital practices in their businesses. On average, half of women in CDOs know how to use a computer, and one-third still cannot use online banking. On the outcome side, participants' businesses have gained a mere 10 to 20 customers from the start of the intervention, and two-thirds of entrepreneurs' households remain under the poverty line. While the vast majority of participants now use social media and online marketing for their businesses, roughly half have not yet sold any goods or services online.

Meanwhile, in terms of work at the extensive margin—which regards the scale of resources used—DEF should consider expansion out of the current group of 13,843 women entrepreneurs and 1,100 CDOs across the 27 districts in which it works. As DEF has already demonstrated by more than doubling the number of districts it works in between Phase I and Phase II, their approach is scalable and ready to be implemented in other rural regions of India. As the Digital Sarthak program operates in 13 states and 10 languages, this model has the potential to be replicated, with marginal increases in funding, in the remaining 431 districts in its program states.

Finally, DEF must continue to invest in the tools and relationships the intervention has built and maintained during the program's lifecycle. MeraApp, DEF's proprietary data collection and networking tool, and MeraBills, DEF's bill payment tool, will need to be maintained and supported with technological support as they continue to grow in usership. Less tangibly, community members who were brought together regularly by Digital Sarthak trainings and at Digital Sarthak centers will need support to solidify and perpetuate their relationships. Since entrepreneurship develops through sustained work, communities of entrepreneurs will need continued interaction with trainers to continue their personal and professional growth.

LESSONS LEARNED:

- **Business development is a long-term outcome.** The difference between digital marketing uptake shortly after training and at endline clearly demonstrates that business growth is not linear; rather, it faces a steep learning curve during which actual skills develop slowly, followed by a period of steadier increase in customer base and revenue once those skills are developed sufficiently.

As a result, future interventions that build businesses must sample outcomes periodically after participants experience repeated exposure to knowledge transfer activities such as training. Business success is a long-term outcome that will not be captured if tracking is discontinued as a project ends; full realization of business development goals can take several years to develop at the minimum. Growth is also highly dependent on economic climate, so targets should be adjusted realistically based on national, regional, and local economic trends.

- **Digital upskilling is only one tool in the mentorship toolbelt**. Poor, rural women entrepreneurs often face complex issues such as supply chain integration, product diversification, and competing home and work priorities that digital upskilling cannot solve singlehandedly.

  For example, the main hurdle facing women entrepreneurs in Murshidabad, West Bengal is the inability to market goods outside of their villages without resorting to using middlemen who eat into their narrow profit margins. While increasing smartphone usage helped increase the range from which customers can come pick up goods in person from less than two kilometers to over twenty, the entrepreneurs' goods are still not able to reach regional or national markets in cities like Kolkata and Delhi.

  As a result, the best Digital Sarthaks become multifunctional entrepreneurship mentors, connecting participant women entrepreneurs with government initiatives and services for small business owners, coaching them to build agency in their households, and helping them find the right niches and strategies for their unique businesses. The personal and social bonds that form between an entrepreneur and her Digital Sarthak are as or more important than the knowledge transfer that takes place during training. Future programs implementing training should carefully consider the power of social links between trainers and participants to foster and support ongoing engagement.

- **Entrepreneurs are better together.** While the vast majority of women entrepreneurs benefited from participation in the Digital Sarthak program, increases in sales and customers were even more pronounced among community development organizations. Additionally, Digital Sarthaks who operated digital centers joined the ranks of the women entrepreneurs, since they became small business operators facing the same set of incentives and weathering the same economic conditions as the entrepreneurs they served. Thus, one of the strengths of the Digital Sarthak program was bringing together stakeholders who had shared goals and experiences, but diverse levels of expertise, so that relevant business development knowledge could flow throughout the network.

- **Consistently target entrepreneurs.** Mobilization of women entrepreneurs was uneven across different geographies. While most participants in the ten first-phase districts were entrepreneurs or business operators, some were neither owners nor operators. Three districts had a significantly lower proportion of business owners than average: Nuh, Haryana; Barmer, Rajasthan; and both of the intervention's districts in the state of Jharkhand, Ramgarh and Khunti. Interviews with Digital Sarthaks in West Bengal revealed that during the initial phases of the intervention, women entrepreneurs were skeptical of digital resources' utility, so they did not take any further interest in the program until they saw their neighbors achieving positive results from participating in DEF training.

DIGITALLY DELIVERING GOVERNMENT SERVICES

PROBLEM AND APPROACH

As India digitizes, government service delivery must also move online. While the Indian government's Digital India strategy began in 2015, citizens' unfamiliarity with digital tools, inefficient rollout, and inadequate Internet connectivity has hindered the strategy's implementation thus far. To meet the demand for Internet service, the Indian government attempted to connect 250,000 villages as part of the National Fibre Optic Network—first launched in 2012 and later rebranded BharatNet—but that project is severely delayed, achieving only 27 percent of its target by 2022, ten years into the initiative.[6] Digital literacy is a key barrier to widespread digital government access: a 2022 Deloitte survey found that Indians depend the most on assistance to use digital government services of any Asia-Pacific country.[7]

The Digital Sarthak program's Module 6, "Citizen and Financial Services," focuses on connecting women entrepreneurs with government services. It introduces seven government initiatives for personal financial support as well as four that provide funds to small businesses. The module explains eligibility requirements for each initiative and walks trainees step-by-step through the respective application processes. The module also discusses how to access the Indian government's common services centers, which are physical access points in rural areas that serve as one-stop shops for government services— not only for welfare provision, but also identification, licensing, banking, healthcare, and education services.

As part of Phase II of the Digital Sarthak program, DEF formed a relationship with the Indian Central Government to support the Pradhan Mantri/Prime Minister's Wi-Fi Access Network Interface (PM-WANI) framework. (*Wani* means "voice" in Hindi.) PM-WANI incentivizes entrepreneurs to open public data offices (PDOs) that can be interconnected to form a nationwide network. Government contractors called "PDO aggregators" provide each PDO with a programmable, metered Wi-Fi access point that provides last-mile broadband services to communities that are inaccessible through existing digital infrastructure. By distributing affordable and local high-speed Internet to rural areas, PM-WANI expects to promote digital inclusion, bridge the digital divide, foster entrepreneurship, and create information and communications technologies (ICT) jobs for PDO owners. Thus, PM-WANI simultaneously benefits the community by promoting digitalization and increasing access to information.

DEF's role was to spread information about PM-WANI to 90,000 women and model PM-WANI uptake by helping 200 Digital Sarthaks open PDOs in 25 underdeveloped districts across 13 states, an expansion that would provide Wi-Fi access to 50 blocks and 1,500 villages. These PDOs would use existing telecom service providers and Internet service providers to amplify Internet service in their areas. DEF used a mobile-based chatbot to inform entrepreneurs about PM-WANI and supplemented the existing training curricula with additional modules.

---

[6] https://theprint.in/opinion/bharatnet-synonymous-with-operational-inefficiency-merger-with-bsnl-must-address-gaps/998890/

[7] https://csd.columbia.edu/sites/default/files/content/docs/ICT%20India/Papers/ICT_India_Working_Paper_56.pdf
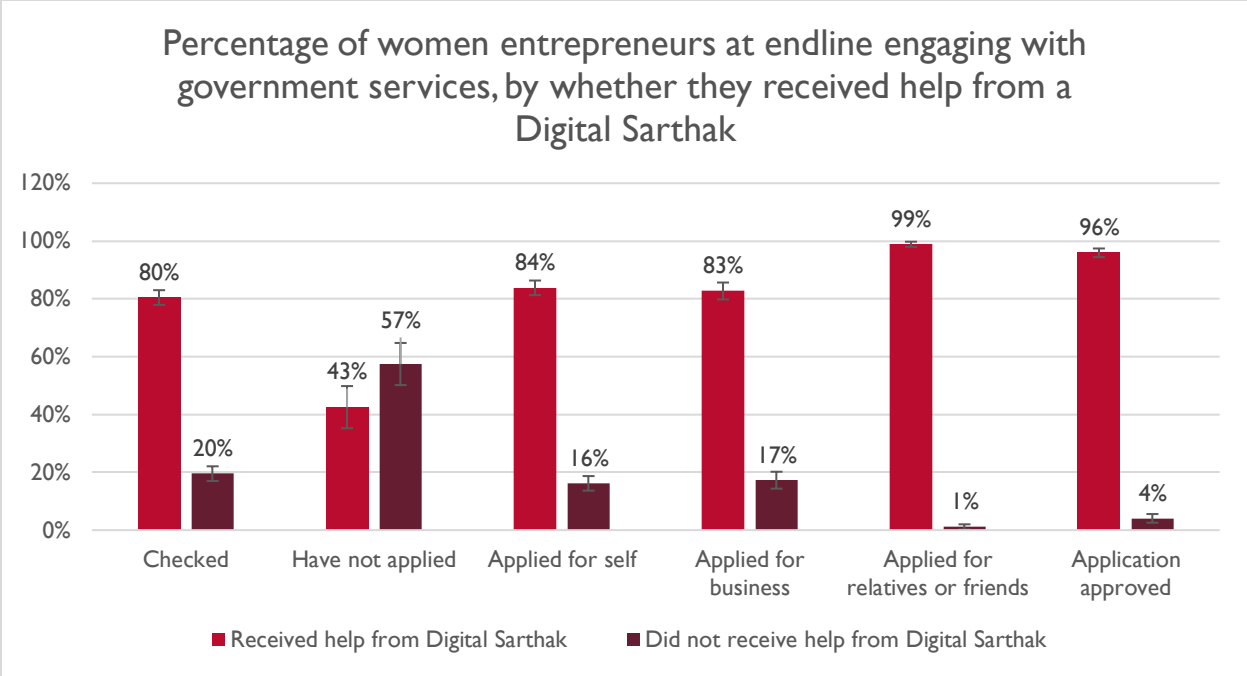
OUTCOME

By most measures, the Digital Sarthak program expanded access to and use of government services for the rural women entrepreneurs and CDOs who participated. Notably, the proportion of women who become aware of new government welfare programs and job announcements via digital government access roughly tripled, from 32 percent to 95 percent, between February 2021 (baseline) and December 2022 (endline).[8] Additionally, the percentage of women who searched for welfare programs and job announcements from a mobile phone increased nearly fivefold from baseline (17 percent) to endline (82 percent).

In terms of use of government benefits, while only 30 percent of women entrepreneurs were benefiting from government programs at baseline, almost all respondents of the usability survey following Module 5 said they had applied for one or more of the government programs described in the module. In the larger sample taken at endline, 72 percent of women entrepreneurs reported they had applied for at least one program, and 78 percent of those women's applications were successful. Nearly every woman entrepreneur applied for both personal and household safety nets, and three-quarters applied for business support programs as well—with a somewhat lower success rate of 58 percent.

Almost all entrepreneurs applied for benefits and services on their own behalf, but their newfound knowledge spilled over into their community, as well; 73 percent of participants assisted relatives or friends in applying for government benefits or services, and almost two-thirds of their applications were successful.

Endline data show no significant differences between application rates and success rates across income groups, and business owners do not seem to apply for programs more than non-entrepreneurs. However, these data merit more exploration. Applications to government services were high and relatively uniform across most states at endline, with some notable outliers on each side of the continuum.

---

8 Questions on the baseline and endline survey regarding access to information about government services slightly differed. The baseline asked, "क्या आपको सरकार द्वारा घोषित किसी योजना या नौकरी के बारे मे जानकारी है?", which means "Do you inform yourself about announcements about any schemes or jobs from the government?" while the endline asked, "क्या आप इस बात की जांच करते हैं कि सरकार द्वारा कोई नई योजना, या नौकरी घोषित की जा रही है?" or "Do you check this: whether the government has a new scheme or is releasing a job announcement?"

Percentage of women entrepreneurs at endline engaging with government services, by whether they received help from a Digital Sarthak

Legend: ■ Received help from Digital Sarthak ■ Did not receive help from Digital Sarthak

Category	Received help	Did not receive help
Checked	80%	20%
Have not applied	43%	57%
Applied for self	84%	16%
Applied for business	83%	17%
Applied for relatives or friends	99%	1%
Application approved	96%	4%

Note: *Error bars display 99% confidence level (Exact Method).*

DEF's information campaign about PM-WANI was successful—the overwhelming majority of women entrepreneurs (84 percent) and CDO leaders (88 percent) reported knowing about the government initiative. A plurality—about two-fifths—of participants answered the endline survey's knowledge check questions correctly: they were able to list the responsibilities of a PDO owner as well as the requirements for a PDO owner to authenticate their identity.

The endline survey also showed that women entrepreneurs overwhelmingly volunteer to open PDOs to further PM-WANI's goals. Overall, more than three-quarters of women entrepreneurs—and 81 percent of CDO leaders—expressed interest in opening a PDO. DEF was able to achieve this outcome despite limited dissemination of PM-WANI-related training modules. In comparison to the thousands of women entrepreneurs trained on the first seven training modules and the goal of informing 90,000 women about the government program, no more than 100 women have been trained using any of the later modules. Rather, most of the PM-WANI information campaign has been conducted through the development of a chatbot in ten languages that runs on the Telegram app.
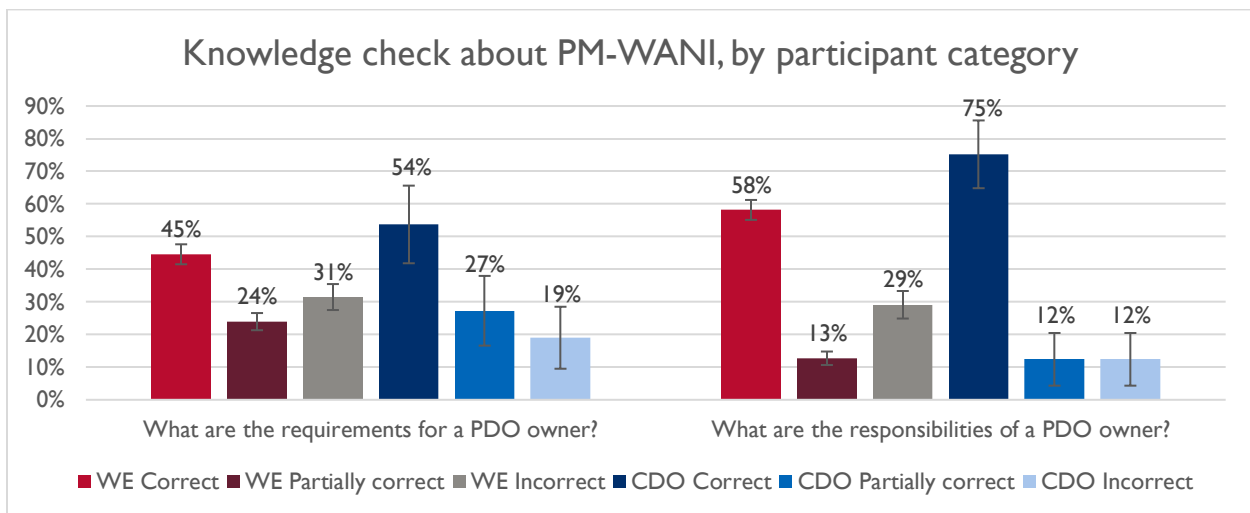
Photo: Robin Banerji for DAI

A follow-up interview with West Bengal's district coordinator confirmed inconsistencies with survey protocol during the PM-WANI portion of the survey. According to the coordinator, during the endline, the question about whether the woman entrepreneur wanted to open a PDO was phrased as, "This is a scheme through which you can earn money and increase your income. Would you like to do it?" Since the program was explained during or directly before the survey, the survey respondents could confidently claim to recognize the scheme, but a woman entrepreneur or Digital Sarthak who had not learned about PM-WANI from a survey enumerator were unlikely to be able to describe the initiative.

Nonetheless, significant knowledge gaps about PM-WANI persist, as clearly demonstrated in a focus group that included West Bengal's district coordinator and several Digital Sarthaks, women entrepreneurs, and CDO representatives. When told that 80 percent of women entrepreneurs in the endline survey pilot had expressed interest in owning a PDO and asked whether they believed that all of those women entrepreneurs would become PDO owners, none of the focus group participants understood what a PDO was except the district coordinator, who explained the basic concepts of the PM-WANI program in response to the question. This qualitative finding casts doubt on the overall validity of the endline survey data, as most surveyed participants could answer basic knowledge questions about PM-WANI correctly and, in fact, West Bengal had the second-highest score on the knowledge-checking portion of the endline survey.

These qualitative data help to explain oddities in the responses to the endline survey's PM-WANI questions. For instance, out of 404 endline participants who denied knowing about PM-WANI, 165 expressed interest in owning and operating a PDO. A handful of participants—around 10 percent—were also able to answer both knowledge check questions correctly.

Knowledge check about PM-WANI, by participant category

	What are the requirements for a PDO owner?	What are the responsibilities of a PDO owner?
WE Correct	45%	58%
WE Partially correct	24%	13%
WE Incorrect	31%	29%
CDO Correct	54%	75%
CDO Partially correct	27%	12%
CDO Incorrect	19%	12%

Note: Error bars display 99% confidence level (Exact Method).

Furthermore, women entrepreneurs still cannot receive PM-WANI benefits themselves. In meetings with DEF, government officials at the Center for Development of Telematics (C-DoT) were uninformed about the program's rollout status and were unable to provide DEF direction. DEF's independent research suggested that found that out of the 25 target districts, only six had sufficient infrastructure to provide broadband service to the PDOs through a PDO aggregator, without which the PDOs could not connect to the national PM-WANI network, customers could not connect to PDOs' Wi-Fi routers, and therefore PDO owners could not be paid accurately for the services they provided. Further conversations with potential aggregators found them unwilling to provide training or maintenance support to Digital Sarthaks who purchased Wi-Fi routers from the aggregators.

As of January 2023, DEF staff and Digital Sarthaks still face challenges in accessing PM-WANI benefits. While some PDO aggregators are now available in target districts, their routers lack the promised features that set the PM-WANI initiative apart: they provide Internet service at standard rates, not subsidized; their routers have ranges comparable to household routers, not long-range, and PDO customers are not able to consistently authenticate their Wi-Fi connection. DEF's West Bengal district coordinator reported that, despite his best efforts, he has not been able to procure a PM-WANI-enabled router to set up a model PDO for Digital Sarthaks and women entrepreneurs to visit.

SIGNIFICANCE

With 68 percent of DEF's women entrepreneurs living under the poverty line even while working to contribute as much as they can to their household income, government safety nets must be available to support them in their household consumption and business investment and to provide a financial cushion to protect against negative economic shocks. As the government responds to citizens' demands for more accessible digital government services, access to these safety nets is going online and through mobile apps. Therefore, digital literacy remains a chief barrier to achieving India's e-government goals, alongside poor digital infrastructure.

DEF identified the use of digital government services as a priority skill for participants to learn in their Digital Sarthak trainings. In doing so, they opened a pathway to government services for two overlapping underserved groups: citizens with Internet access who had no access to government services because they lived in areas too remote for government contact, and digitally illiterate citizens who had no access to government services because those services were offered primarily online. Due to India's geographical constraints, poor delivery of public services, and push to digitize to respond to the COVID-19 pandemic, improving access to government services for these groups is important.

CONTRIBUTION

The contribution of the Digital Sarthak program to increased uptake of government services is readily apparent. A Digital Sarthak reported in an interview in Nadia, West Bengal that before participating in DEF's intervention, few or none of her community members knew that they were eligible for pension benefits through the Atal Pension Yojana or Varishtha Pension Bima Yojana programs: they previously believed that only government employees received guaranteed pensions and had never heard that they could contribute towards government pension plans, even if they worked in the informal economy. Several Digital Sarthaks also recalled participants using government small business benefits to purchase capital, such as sewing machines and jars for packaging ground spices. Digital Sarthaks can also affect the livelihood of a woman entrepreneur's entire social network; for instance, Huma Khatoon, a program

participant in Barabanki, Uttar Pradesh, reported that she secured a government benefit for her grandmother that supplements her income by $6 (500 rupees) per month.

Another Digital Sarthak explained that after taking Module 6 of the Digital Sarthak training, one of her women entrepreneurs used her newfound knowledge to visit a common services center in her village and claim money through a government incentive that targets child marriage. The woman entrepreneur funded her daughter's wedding (which took place after the age of 18) entirely with the proceeds from the government incentive, obviating what would otherwise have been a considerable expense that could have incurred serious debt, as three-fifths of Indian families take loans—often at punitive interest rates—to fund their daughters' weddings.[9]

What would have happened in the absence of the intervention? Since 2015, the Indian government has publicly recognized the importance of providing digital services that are sensitive to the needs of citizens who are unfamiliar with digital technology. According to Deloitte's 2022 survey, 83 percent of Indians see government services becoming more digitized, 78 percent believe that government services have become easier to use since 2020, and 81 percent believe that digital government services have adapted well to COVID-19 lockdowns and pandemic measures.[10] As such, it might be assumed that government services uptake is high, even among digital novices.

However, DEF's baseline data indicate that women entrepreneurs and CDO members would not have used government services without DEF's help. Even in February 2021, when the baseline assessment was conducted, only one-third of women entrepreneurs and slightly over half of CDO members were using a government welfare program. Until joining the Digital Sarthak program, the majority of participants had used in-person communication channels to learn about benefits programs: 63 percent had visited the *sarpanch*, or village council chief for information, while 15 percent exclusively heard about welfare opportunities through word of mouth. At endline, 42 percent of respondents had heard of welfare opportunities through family or friends, a threefold increase from baseline.

Assuming that these family and friends constitute a rough proxy control group, this increase could cast doubt on the Digital Sarthak program's efficacy; in other words, since these entrepreneurs' acquaintances gained enough skill and knowledge to assist the women entrepreneurs on how to use government services, perhaps the Digital Sarthaks are not adding much value. However, of respondents who received family and friends' help to apply for government benefits, 97 percent had also received help directly from their Digital Sarthak. The corresponding proportion for women entrepreneurs who received no help from family or friends was comparable, at 93 percent. Thus, their access to government services can be at least partly attributed to the Digital Sarthak program.

What remains to be done? While access to digital government services has doubled to tripled by several metrics, implementation of PM-WANI is lagging. Owing to difficulty in working with the underinformed government counterparts supervising the PM-WANI rollout at C-DoT, as well as difficulties with private Internet service providers that refuse to comply with statutory pricing subsidies,

---

[9] https://www.aljazeera.com/features/2021/1/31/the-financial-burden-of-weddings-on-indias-poorest-families

[10] https://www2.deloitte.com/content/dam/Deloitte/au/Documents/financial-services/deloitte-au-fs-aasb-17-external-audit-250722-new.pdf

provide requisite maintenance, or train PDO operators, DEF has stalled work on its PM-WANI-related aims, which formed the centerpiece of their Phase II activities.

If DEF continues work towards their original goal of informing 90,000 rural women and 500 CDOs, they may follow one of two paths. They could pursue a top-down approach that would require bringing powerful institutional actors to the table like national telecoms providers and stakeholders from the central and state governments so that these actors' political mandates and deep relational networks could catalyze the otherwise reticent authorities to act more quickly to resource the initiative.

Alternatively, as DEF has benefited from pursuing a grassroots approach with the Digital Sarthak program, they could follow a bottom-up strategy would require DEF to expand beyond their existing digital products—MeraApp, MeraBills, and the PM-WANI Telegram chatbot—to invest more heavily in local, grassroots programmers. These staff could then create the necessary software to run Wi-Fi routers similar to PM-WANI's that, instead of using national authentication databases, use local or regional apps or databases that can securely verify the identities of PDO owners and customers and facilitate transactions between them. DEF would also then have to develop additional training curricula in advanced hardware troubleshooting and leverage their existing network of Digital Sarthaks to provide technical support to PDO operators.

LESSONS LEARNED:

- **Relationships open doors.** DCCP activities that forge close, trusting relationships with their government counterparts are often able to predict or counteract the chilling effects of poor governance. For example, the Advancing Timor-Leste's Autonomous Telecommunications Landscape (ATLATL) buy-in was able to adapt to shifting political and economic climate patterns in that country by using an embedded advisor at the partner government's ministry, enabling them to achieve outcomes that had not been foreseen at the project's outset. Closer communication that built trust between DEF and C-DoT may have averted DEF's challenges in implementing their initiative or allowed DEF to adapt or redirect its associated programming. Such a relationship would likely have been mutually beneficial, as C-DoT staff may also have learned the keys to DEF's successes with grassroots implementation of digital literacy projects and harnessed them internally for the PM-WANI rollout.

- **Use resources on hand to advance stalled projects.** Despite delays in launching PM-WANI's model PDOs, DEF used the time and resources allotted to the rollout to develop the PM-WANI chatbot on Telegram and intensify their trainings of Digital Sarthaks in using the Telegram app. This chatbot app now has a user base of 9,121, including 5,170 women entrepreneurs and 3,200 women previously uninvolved with the Digital Sarthak program. One Digital Sarthak predicted that DEF would continue their emphasis on Telegram as it "is the future of social media" in India. Overall, more than 110,000 women have received "handholding support training" on the chatbot, and almost three-quarters of women entrepreneurs had begun using the chatbot before their Digital Sarthak trained them on it.

ANNEX I: DATA SOURCES AND METHODOLOGY

The study developed outcome stories that incorporated evidence generated from four main sources:

1. **Baseline survey:** In February 2021, DEF staff conducted the baseline for DEF's Digital Sarthak program, surveying a representative sample of 1,595 women entrepreneurs and 102 CDO leaders across DEF's ten Phase I districts.
2. **Endline survey:** In December 2022, Digital Sarthaks conducted the endline for DEF's Digital Sarthak program, surveying 1,887 women entrepreneurs and 224 CDO leaders across DEF's ten Phase I districts and 17 Phase II districts.
3. **Usability survey:** In the one to two months following each phase of training, DEF staff randomly selected a 10 percent sample of training participants to report on their experience in the training. During the survey, the respondents took a knowledge assessment to gauge their competency with and retention of the training modules' topics. Our dataset includes all trainings between August 2021 and March 2022, which encompassed the first six modules of the program. These surveys were conducted by Digital Sarthaks in person through MeraApp, DEF's proprietary data collection and monitoring system.[11]
4. **Interviews with field staff and program participants:** In January 2023, DAI staff conducted a two-day field visit in the Murshidabad and Nadia districts of West Bengal, India. During this visit, we interviewed West Bengal's DEF district coordinator, who oversees DEF's activities in the entire state, including activities that are not funded by DAI. DEF has worked in the state of West Bengal for over six years, but the Digital Sarthak program was only rolled out in Phase II, which began in 2021. DAI additionally interviewed two Digital Sarthaks individually, and conducted four focus groups that included a total of eight Digital Sarthaks, six women entrepreneurs, and one CDO representative. These qualitative data are not representative of the program on whole; rather, they serve as illustrative case studies that augment the narrative outlined by the quantitative data.

Additionally, the study benefited from incorporating findings from DEF's quarterly reports, a series of communications-oriented case studies conducted in 2021, and additional accounts from Delhi-based DEF staff, especially on their work on PM-WANI.

Analysis involved systematically interrogating the outcome claims across interviewees and datasets, collecting data using semi-structured, open-ended methodologies, and addressing and/or noting contradictory perspectives in the rare instances they appeared.

---

[11] A summary of high-level training results collected through MeraApp can be found at http://digitalsarthak.meraapp.in/