



SMALL AND MEDIUM ENTERPRISE DIGITIZATION IN BANGLADESH, NEPAL, SRI LANKA, AND INDIA

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THE SHARED MISSION OF THE U.S. DEPARTMENT OF STATE AND THE U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID) IS TO SHAPE AND SUSTAIN A PEACEFUL, PROSPEROUS, JUST, AND DEMOCRATIC WORLD, AND FOSTER CONDITIONS FOR STABILITY AND PROGRESS FOR THE BENEFIT OF THE AMERICAN PEOPLE AND PEOPLE EVERYWHERE. THE DEPARTMENT AND USAID HAVE DEVELOPED A STRATEGIC APPROACH TO ACCOMPLISH THEIR SHARED MISSION THAT FOCUSES ON ROBUST DIPLOMACY AND DEVELOPMENT AS CENTRAL TO SOLVING GLOBAL PROBLEMS.

Performance.gov Department of State and USAID, 2015

”

Executive Summary

The United States Department of State (State) the United States Agency for International Development (USAID), the governments of Bangladesh, India, Nepal, and Sri Lanka, the people of those nations, numerous nongovernmental organizations (NGOs), private institutions, and other interested parties all made great strides over the last two decades to support small and medium enterprises (SMEs) in their establishment and growth.

During this time, stakeholders—both in and on behalf of each of the four countries addressed in this report—have made significant investments in infrastructure and information and communication technology (ICT). Further, they designed policy strategies and programs to increase access and use of technologies and improved business environments by streamlining regulations, promoting exports, and creating or updating legal definitions of SMEs.

Each of these nations are eager for their SMEs to thrive and digitize. State and USAID can further the momentum of the progress of recent years by pursuing or supporting the following:

- Stronger intergovernmental collaboration
- National awareness campaigns
- Outreach and targeted education for marginalized groups
- Investment in infrastructure and digital security
- Public/private partnerships

To produce this paper, the MITRE research team explored both primary and secondary sources. After synthesizing and analyzing the data, we created a series of general recommendations for State and USAID's consideration that revolve around policy, outreach, digital literacy, and digital infrastructure. Chief among these recommendations are: 1) that State and USAID form a joint committee to work together on SME digitization. The two agencies will make greater headway in SME digitization with deeper collaboration. 2) that the definition of digital literacy must expand to include cybersecurity. Cybersecurity training to raise awareness and understanding must be an integral part of all digital literacy efforts. 3) that partner nations who do not currently have an agency dedicated to coordinating SMEs establish one, and 4) that State and USAID assist the partner nations in communicating exemplars for SME digitization and upskilling in each nation.

None of these recommendations can be achieved by any single stakeholder; they require collaboration not only between State and USAID, but also partner governments, the SMEs themselves, and other key stakeholders referenced throughout this paper. We highly recommend this multi-stakeholder collaboration to the extent possible. What follows here is a table of general recommendations that apply to each of the four partner nations at a high level. In addition to these general recommendations, this paper is divided into sections by country, with specific recommendations for each country. We divided the paper into two parts, the first of which focuses on Bangladesh, Sri Lanka, and Nepal, and the second of which focuses exclusively on India.

TABLE E1. GENERAL RECOMMENDATIONS

#	Challenge Area	Work with Key Stakeholders to
1	Policy	Engage in a deeper exploration of micro enterprises to understand their unique features and find ways to incentivize their formalization.
2	Policy	Mandate digital literacy and basic cybersecurity awareness competencies in schools; provide incentives to SMEs for digitizing.
3	Policy	Replicate international cybersecurity standards in the financial sector laws, regulations, banking practices, cybercrime reporting, and the like to further secure digital business transactions.
4	Policy	Where none exists, create an executive branch agency responsible for coordinating and promoting Micro, Small, and Medium Enterprise (MSME) interests across government agencies and with the private sector.
5	Policy	Set a national goal for SME digitization and hold relevant government departments (such as commerce, education, small business, trade, and other related agencies) accountable for achieving tiered results over the next two years and beyond.
6	Policy	Create an intergovernmental task force staffed by State and USAID to promote cyber secure SME digitization starting with a pilot in Nepal.
7	Outreach	Create national cyber awareness campaign to teach the public about the fundamentals of cybersecurity, and be sure to address at a minimum, phishing, digital payments, social media.
8	Outreach	Leverage existing or build new public/private partnerships to mentor SMEs in rural areas, and staff ICT hubs. (See recommendation #11).
9	Outreach	Institute, fund, and use multiple methods for collaboration and training (i.e., virtual methods and mobile classrooms) for SMEs to learn and share techniques, ideas, best practices, with special attention paid to bringing digital and cybersecurity skills to rural areas.
10	Outreach/ Digital Literacy	Create culturally competent public digital awareness campaigns to relay the return on investment associated with using digital tools—use local or at least, regional, success stories with concrete examples.
11	Digital Literacy	Build physical ICT hubs across the country, if they do not already exist. Staff them with people who are aware of technology and digital tools and can help people with advice on tools as well as simple troubleshooting.
12	Digital Literacy	Encourage all digital literacy initiatives to include components of cybersecurity awareness training.
13	Digital Literacy	Hire people from marginalized groups to design and deliver trainings on digital tools to people in their communities (e.g. older people teach older people, women teach women, etc.)
14	Digital Infrastructure	Explore the possibility of installing satellite uplinks to provide internet in rural areas where connectivity either doesn't exist or is unstable.
15	Digital Infrastructure	Build a functional, multi-lingual “one-stop-shop” e-government services portal for SME needs to include information on digital payment, registration, fact sheets on digital tools, Frequently Asked Questions (FAQs) about digital security, etc.

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Introduction

As the executive branch's lead foreign affairs agency and institution for conducting foreign diplomacy, State guides USAID on matters of foreign policy, and USAID collaborates with State as it plans its foreign development and assistance programs. "The shared mission of the U.S. Department of State and the U.S. Agency for International Development (USAID) is to shape and sustain a peaceful, prosperous, just, and democratic world, and foster conditions for stability and progress for the benefit of the American people and people everywhere. The Department and USAID have developed a strategic approach to accomplish their shared mission that focuses on robust diplomacy and development as central to solving global problems." (*Performance.gov Department of State and USAID, 2015*)

The South Asia Regional Digital Initiative (SARDI) is a USAID program that aims to improve digital connectivity across South Asia, while strengthening the digital capacity of both the private sector and civil society. It also focuses on improving these key stakeholders' ability to influence ICT policy. In support of that effort, the purpose of this paper is to look at the countries of Bangladesh, India, Nepal, and Sri Lanka and provide insights about:

- How SME owners and operators are using internet-connected devices and applications, and what data sets are being transmitted via the internet while doing business
- Deficiencies in knowledge, skills, and abilities needed to evaluate, create, and transmit information safely and appropriately to meet business needs and enable economic growth
- Types of digital upskilling that can overcome barriers and improve cyber workforce skills thereby helping SMEs better use safe digital tools to improve their own businesses and enhancing economic growth across the region.

We were asked to make recommendations that could be enacted within the next 12 – 24 months and scoped them accordingly.

APPROACH

DAI, and MITRE entered into an agreement through which DAI would provide access to its in-country consultants to MITRE to assist with identifying points of contact and in some cases interpreting during interviews. We began our research by speaking with these consultants and discussing our initial thoughts about areas of focus in each of the four nations. Next, we identified and reviewed several critical secondary sources to include documents that gave us a general overview of the countries, of SMEs in each, of laws, regulations and programs regarding both digitization and SMEs, along with other critical background information. After that, we worked with the DAI consultants to set up interviews with points of contact that they suggested except for the nations of Bangladesh and India where the MITRE team depended on USAID, State, and cold calling/ emailing of people we identified through web and social media searches. Finally, we interviewed SME owners and operators, chambers of commerce, heads of trade associations, government employees, and others who were associated with SMEs and willing to speak with us. We offered non-attribution to all interviewees unless they specifically asked us to use their names and none of them did. Appendix A lists all our interviews without names but does include their country, industry/sector, the date of the interview, and who they were interviewed by. Using the American Psychological Association's style book, the reader will note that the research team's interview citations all begin with a number that corresponds with the

interviews listed in Appendix A. All the interviews were conducted remotely due to pandemic-related constraints. Unfortunately, we were not able to speak with interviewees in Bangladesh, so we did not feel that we had enough information to make recommendations for that nation, electing instead to summarize key secondary sources to provide context for future action, and we wrote conclusions based on observations primarily gleaned from what we found in secondary sources.

It became evident as we began our research that micro enterprises are more numerous than small or medium enterprises, but since they are out of scope for this project, we did not spend a lot of time exploring them. However, they are somewhat entwined with small and medium enterprises in that they do business in the same communities, contend with the same governments, financial and educational systems, and trade organizations, sometimes expand over time to become small enterprises, and further, many nations aggregate statistics about SMEs with micro enterprises, so we did not entirely ignore them. In many cases we refer to “MSMEs” where data or context are not possible to extricate from SMEs throughout the paper.

BACKGROUND: KEY FACTS ON SMES, DIGITIZATION

Bangladesh, India, Nepal, and Sri Lanka didn't experience the same levels of foreign investment in large scale, advanced manufacturing as some other Asian nations in recent years. Instead, the SME sectors in the region's agriculture, handicrafts, textiles, and service sectors have been the driving force behind the region's increased exports, personal incomes, and productivity levels. (*Ijaz Nabi, 2010*). Over the past two decades, each of the countries

we address in this report invested in infrastructure and ICT development and designed policy strategies and programs to increase access and use of technologies. Further, they improved their business environments by streamlining regulations, promoting exports, and creating or updating legal definitions of SMEs, and gradually the emphasis on technology, investments, and business reforms are increasing in frequency and complexity over time.

Although the approaches and legal definitions of SMEs vary by country, each continues to take steps to apply the commercialization and proliferation of personal technologies—such as personal computers, tablets, smart phones, satellite track phones, and digital camera and videography equipment—to their SME sector. SMEs are applying these technologies in several useful ways, including to improve product and service marketing appeal to reach new markets and consumers, relationships with colleagues, suppliers, and customers, and transaction, loan, and production records that increase access to formal banking and credit services. However, much more work needs to be done before SMEs are fully vested in and benefiting from digitization. Issues such as awareness of tools and their benefits, access to education and technology, as well infrastructure and a strong culture of security awareness stand in the way of full implementation. This paper will describe the SME digitization context in the four nations of note

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and make recommendations for activities that State and USAID promote or execute in a collaborative effort to spawn peace and prosperity in the region through SME digitization.

SMEs do play a large role in the GDP of each of these four nations. First, glancing at their overall GDP, one can see that by virtue of the sheer size of India, its GDP dwarves that of the other three nations.

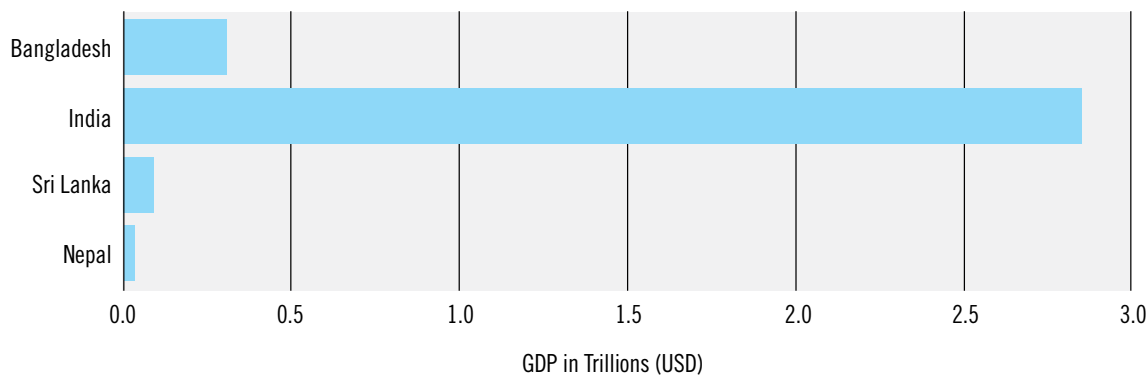


FIGURE 1. GDP OF BANGLADESH, INDIA, SRI LANKA, AND NEPAL IN TRILLIONS (USD)
(CIA, 2022)

Bangladesh, Sri Lanka, and Nepal, each measure their GDP in billions as opposed to India’s trillions. SMEs are critical to each of the four countries included in our

analysis. Nearly 50% of Sri Lanka’s GDP comes from SMEs, while each of the other countries rely on SMEs for at least 20% of their GDPs.

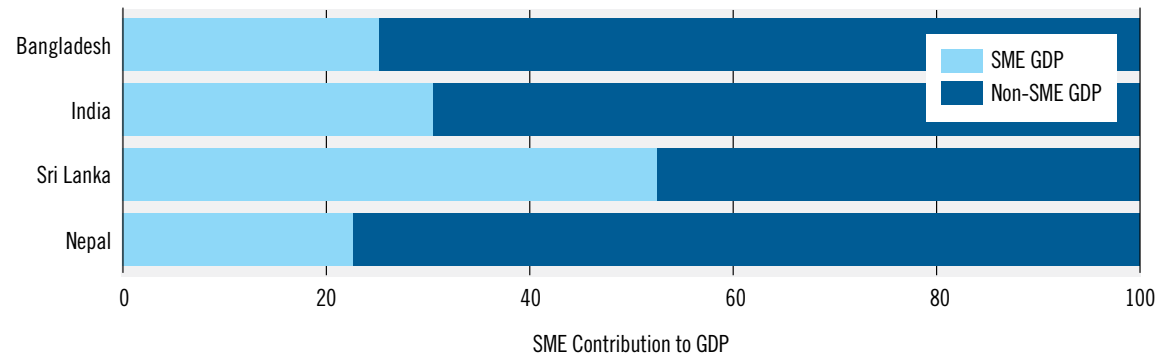


FIGURE 2. SME CONTRIBUTION TO GDP PER SOUTHERN ASIAN NATION
(Ministry of Industries, 2019, p. 4; Government of India—Ministry of Micro, Small and Medium Enterprises, 2021; Kharel & Dahal, 2020; Sri Lanka Ministry of Industry and Commerce)

To properly understand the current reach of digitization, here we see the amount of each of the four countries populations that are online. India has the broadest internet coverage with over 40% of its

population online. India’s rate is trailed slightly by Sri Lanka, while Nepal and Bangladesh have much lower coverage rates than their peers.

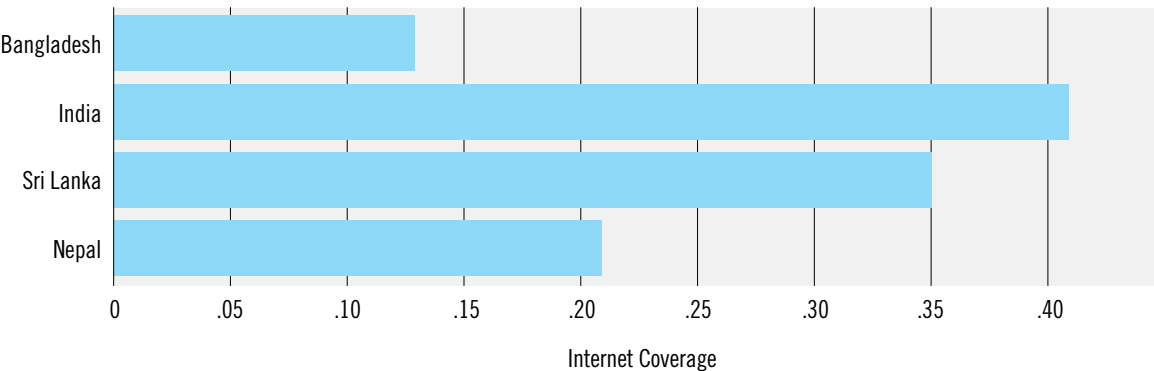


FIGURE 3. PERCENTAGE OF POPULATION ONLINE PER SOUTH ASIAN NATION
(International Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database, 2020)

India’s rate is trailed slightly by Sri Lanka, while Nepal and Bangladesh have much lower coverage rates than their peers.

Because most people in Bangladesh, India, Nepal, and Sri Lanka access the internet using smart phones, it is critical to understand their prevalence.

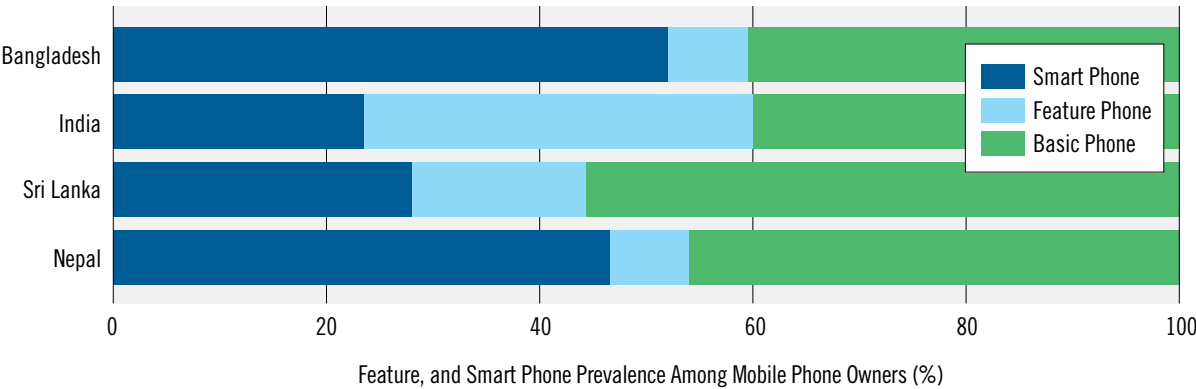


FIGURE 4. SMART, FEATURE, AND BASIC PHONE OWNERSHIP *(Galpaya, Zainudeen, & Amarasinghe, 2019)*

CONCLUSION

There is no doubt that multiple people, organizations, and agencies work with the nations of Bangladesh, India, Nepal, and Sri Lanka to assist them in supporting digitization of their SMEs as well as upskilling of SME owners and operators. Over the past two decades, all of these forces joined together to make impressive progress, however, much more progress remains on the horizon. In the next 12 – 24 months, State and USAID can join forces to work more closely together than ever before in a concerted effort to ensure that digital security is wrapped into SME policy, outreach, and upskilling efforts. They can encourage partner nations to consider cybersecurity as a critical component of digital literacy. As millions of SMEs begin to accept digitization and rely more on digital tools such as digital payments and accounting software, it would be a great loss if they started to experience large-scale fraud and theft, which could

wipe away their newfound if tentative trust in all things digital in an instant. The digital successes of these entrepreneurs will surely yield more digital successes, but digital failures could yield a hasty digital retreat that SMEs and the GDPs of their nations would take years to recover from. Indeed, State and USAID can increase successes in SME digitization and upskilling by creating a committee to institutionalize their collaboration as they work with partner nations. An emphasis on the following will pave the way for longer term gains, boosting the productivity of SMEs and overall GDP:

1. Stronger intergovernmental collaboration
2. National awareness campaigns
3. Outreach and targeted education for marginalized groups
4. Investment in infrastructure and digital security
5. Public/private partnerships

COUNTRIES

THE FOLLOWING SECTIONS INTRODUCE THE FOUR COUNTRIES STUDIED IN THIS PAPER—BANGLADESH, NEPAL, SRI LANKA, AND INDIA, WHICH DUE TO ITS SHEER SIZE IS IN ITS OWN PART, PART TWO. EACH SECTION PROVIDES CONTEXT FOR THE COUNTRY'S ENVIRONMENT, BOTH IN TERMS OF SMES AS WELL AS DIGITIZATION. EACH COUNTRY SECTION FOCUSES ON THE UNIQUE “CHALLENGES TO DIGITIZATION” EXPERIENCED BY THAT RESPECTIVE COUNTRY'S SME STAKEHOLDERS, LEVERAGING OBSERVATIONS GLEANED FROM INTERVIEWS AND SECONDARY SOURCES ON BOTH SME AND DIGITIZATION TOPICS TO DRAW CONCLUSIONS AND PROVIDE RECOMMENDATIONS.



BANGLADESH

COUNTRY CONTEXT

Bangladesh (or officially, The People's Republic of Bangladesh) ranks eighth in the world for population with the current total around 160 million and is a lower-middle income country. (*The World Bank—Bangladesh Overview, 2022*).

The Bangladeshi economy experienced rapid growth over the past two decades (roughly 6% annually) despite its challenges that include political instability and corruption, poor infrastructure and inconsistent power supply, and tepid economic reform initiatives. Despite this growth, Bangladesh is still considered to be one of the least developed countries and most overpopulated countries in the world (*United States Central Intelligence Agency, 2020*).

Bangladesh generates nearly half of the nation's GDP through the services sector; however, the nation has a sizable agriculture sector, and almost half of Bangladesh is (45%) employed in the farming sector, with rice being their single most important agricultural product. In addition, in 2016 – 2017, garment and textile production accounted for over 80% of national exports, which contributed to the nation's rising foreign exchange reserves (*United States Central Intelligence Agency, 2020*). Data from the Bangladeshi 2013 Economic Census indicate that, of the approximately 8.1 million total enterprises surveyed across Bangladesh, 70% of them are in rural areas compared with 30% urban (especially concentrated in Dhaka and the other four largest cities) (*Abdin, MSMEs—both a choice and a reality for Bangladesh, 2019*). Additionally, 7.2 million can be classified as SME enterprises and account for 90% of private enterprises in Bangladesh (*Asian Development Bank, 2021*).

OBSERVATIONS

The following sections describe the economic target enterprise classes of SMEs and their overall role in the Bangladesh economy. The section also includes high-level observations regarding the overall attitudes toward digital adoption.

MSME Definitions and Distributions in Bangladesh

Based on this definition, the SME Foundation identified 177 SME Clusters in 51 districts of Bangladesh. Table 1 provides the scale definition for the industry levels.

TABLE 1. INDUSTRY ENTERPRISE DEFINITIONS FOR BANGLADESH (HOSSAIN, 2016).

Sector	Criteria	Cottage	Micro	Small	Medium
Manufacturing	Amount of Investment	<1M BDT (< \$12k USD)	1M – 7.5M BDT (\$12k – \$88k USD)	7.5M – 20M BDT (\$88k – \$234k USD)	15M – 50M BDT (\$175k – \$582k USD)
	Number of Employees	0 – 15	16 – 30	31 – 120	121 – 300
Service	Amount of Investment	<1M BDT (< \$12k USD)	1M – 7.5M BDT (\$12k – \$88k USD)	1M – 20M BDT (\$88k – \$234k USD)	20M – 30M BDT (\$234k – \$3.5M USD)
	Number of Employees	0 – 15	16 – 30	16 – 50	51 – 120

SMEs of Bangladesh and Their Role in the Economy

The SME sector works as a catalyst to boost up national income as well as to generate employment opportunities since this sector is labor-intensive and less time-consuming for production with less capital expenditure or lower establishment cost.

MSME including cottage industries, are critical to economic growth. They account for 25% of nation's GDP (including 40% of manufacturing output), cover 99.97% of all Bangladeshi enterprises, and employ roughly 87% of the civilian population (*Asian Development Bank, 2021*) (Abdin, *MSMEs—both a choice and a reality for Bangladesh, 2019*). Like other developing countries, Bangladesh has great potential for development of SME sector.

Starting in 2011, the Bangladeshi SME Foundation, a not-for-profit organization established by the Bangladeshi government to implement policy, advocated for SMEs, provided training and facilitated access to and adaptation of ICT (*Small and Medium Enterprises Foundation Established by the Government of Bangladesh, 2021*) focused on measuring economic cluster activity. The Bangladeshi SME Foundation formally defined economic cluster, with inputs from a broad range of stakeholders across industry and government, as, “a concentration of enterprises producing similar products or services and is situated within an adjoining geographical location and having common strengths, weaknesses, opportunities, and threats.” (Abdin, *Role of SME clusters in Bangladesh economy, 2018*). Table 2 lists the 177 economic clusters identified by the SME Foundation operating within 51 of the nation's 64 Districts.

TABLE 2. BANGLADESHI SME CLUSTERS (*Small and Medium Enterprise Foundation, 2013*)

Manufacturing-Oriented Clusters	Major Product Examples	Qty (%Total)
Handicrafts and Miscellaneous	Home furnishings (baskets, cookware, utensils, etc.), wooden furniture (beds, desks, tables, etc.)	38 (21%)
Agro-Processing/ Agri-Business/Plantation	Rice varieties, husking dust, burning wood, oils, etc.	34 (19%)
Light Engineering and Metalworking	Home-building parts for doors, windows, fencing, metal furniture, automotive/industrial parts, etc.	31 (18%)
Knitwear and Readymade Garments	Thread, pants, shirts, jackets, clothing sets, baby clothes, towels, etc.	22 (12%)
Fashion Rich Effects, Wear and Consumers Goods	Gold or silver jewelry, haircare, skincare and makeup products, etc.	16 (9%)
Leather Making and Leather Goods	Shoes, sandals, slippers, etc.	13 (7%)
Handloom and Specialized Textiles	Blouse, Sari, Panjabi, cushion cover, sheets, bedding, pillow covers, etc.	10 (6%)
Electronics and Electrical	Circuit boards, switches, sockets, coils, batteries, electric cables, televisions, etc.	3 (2%)
Plastics and Other Synthetics	Homegoods (Mugs, Bowls, Buckets, etc.) and many other home appliances	3 (2%)
Manufacturing Cluster Total		170 (96%)
Service-Oriented Clusters	Major Product Examples	Qty (%Total)
Healthcare and Diagnostics	X-ray scans, ultra-sonogram, CT scans, ECG, biochemical testing, etc.	5 (3%)
Educational Services	Education services and counselling	2 (1%)
Service Cluster Total		7 (4%)
Total (All Clusters)		177

The SME sector works as a catalyst in developing local, then regional economies, and eventually transforming the nation into an industrially developed country. As SMEs operate, localized, interrelated enterprises support each other together as a cluster. These clusters further benefit from multiplier effects of urban development, connectivity, productivity, industrial linkages, and competitiveness. As an example, leather-making and leather goods SME clusters include the leather goods' producers themselves, but also services for machineries, leather suppliers and tanneries, fastener production, and associated machine tools.

Geographically, SME clusters appear to be scattered across the nation with some expected grouping around the largest city of Dhaka. Upon further inspection, when comparing it geographically with the poverty rates, some correlations emerge. Agriculture-related SME clusters appear to be strongly correlated with regions where poverty rates are the highest. Textile and garment SME clusters (*Handloom & Specialized Textile, Knitwear & Readymade Garments*) seem to correlate with regions of moderate poverty, while electronics production, designer wear, and educational- and health-services SME clusters are primarily located in the area surrounding Dhaka—a region in the lowest poverty rate category.

It's important to note that many of the descriptions of the economic conditions in Bangladesh are based on data captured nearly a decade from the development of this study (*Small and Medium Enterprise Foundation, 2013*). While many of the overall observations may still hold, the severity is likely much less than shown as significant advancement in poverty reduction has occurred; this is due to concerted efforts by government policies and programs with help from NGOs, discussed in more depth below (*Chowdhury, 2020*).

Digital Adoption

In just over a decade, Bangladesh has experienced considerable digital transformation. Internet penetration increased from 1% of the population to over 60% (likely due to the cost of access having dropped two orders of magnitude and the increase in quality of service from 2G – 4G). In parallel, the Bangladesh ICT industry also grew steadily year-over-year in the same time frame with revenues of \$25 million (USD) in 2007 to over \$1 billion (USD). This rapid growth of technology enabled widespread use of e-commerce, mobile financial services (also spurred on by the pandemic), digital government services, etc. to the point of Bangladesh's first satellite in orbit. In terms of impacting the SME business landscape, a study of service-oriented SME owners who are mainly running their businesses with the help of ICT reflected that digitization has been transformative (*Rahaman & Chowdhury, 2016*).

Certainly, there are advantages by adapting modern digital technology for many SMEs by improving access to customer needs, organizing business processes and transactions, and accessing new markets. Automation technology, even on the most basic level, can help increase productivity, improve production speed and quality assurance, and lower operating costs. Technology enables easier access to available workforce and job opportunities. Finally, it enables businesses to manage risk by increasing security of business finances and data (*Khan, 2021*).

However, major challenges currently facing many Bangladeshi SMEs present a formidable barrier to the adoption of appropriate modern technologies. Many of those SME owners studied (above) have the benefit of a formal education. For service-oriented SMEs to remain competitive—service sectors being much more easily adapted to digitization—owners cite ICT as the most important element to improve SME service performance (*Rahaman & Chowdhury, 2016*).

Relevant Public Policy and Federal Legislation

The sections below lay out how the Bangladeshi government developed policy and legislation to promote and grow digital technologies within SMEs over the past decade or so.

Public Policy and Strategy Over the last two decades, Bangladesh experienced successful growth in several development metrics from income and economy to social development to digital literacy and adoption (*Chowdhury, 2020*). Much of this growth was due to Bangladesh's Vision 2021, a political policy and agenda set out by the Awami League party prior to winning the National Elections in 2008. This plan aimed to enable Bangladesh to grow into a middle-income country by 2021 through strategic programs in economic development, educational access, infrastructure modernization, social inclusion and equity, and more. In all, Vision 2021 has been successful in that, every year since its inception, Bangladesh attained new records in earnings, foreign exchange, exports, and foreign investment. A renewed version of this policy, named Vision 2041, seeks to continue the recent growth trends to eliminate poverty and elevate living standards by 2041 (*Alam S., 2019*).

A notable element of Vision 2021 was Digital Bangladesh 2021, which focused on improving ICT infrastructure and adoption across the nation in both the public and private sectors. The associated efforts enabled the country to see exponential growth in mobile phones use, internet connectivity, and digital public service access, where 99% of people and 95% of geographic areas of Bangladesh receive mobile telecommunications service and have network coverage (*Centre for Research and Information, 2017*). In the same time period, ICT use and instruction in

the Bangladesh educational ecosystem grew, and the government increased the amount of ICT training programs it offered to promote youth employment.

Another major policy for supporting growth of SMEs in Bangladesh is the National Industrial policy 2016, of which the SME Policy 2019 directly focuses on growth (*BER, 2017*). The principal goal of SME Policy 2019 is to provide support through increasing access for SMEs within six key factors: finance, technology and innovation, markets, education and training, business support service, and information. This is supported by strategies designed around the development of supportive policies and appropriate environment, sustainable and effective organizations, and opportunities to provide financial and business support services to prospective and disadvantaged SME owners (*SME Policy 2019, 2019*).

Relevant Legislation To ensure that Bangladesh could achieve goals of the established policies for economic growth, the Bangladeshi government enacted key pieces of legislation within the context of the country's gradual economic development. These laws lay the groundwork for the focal areas of this report by defining and securing digital technologies and their applications as well as providing a legal foundation for Bangladeshi SMEs to prosper.

The Information and Communication Technology Act of 2006 Amended in 2013, this makes provisions for the legal recognition of electronic communications, record-keeping, and transactions and identifies authorities and responsibilities for relevant government agencies (*The Information and Communication Technology Act, 2006*).

The Competition Act of 2012 This was written to make provisions to promote, ensure, and sustain an

economic climate for healthy business competition, but also to prevent, control, and eradicate collusion, monopolistic (or oligopolistic) market behavior combination or abuse of dominant position or activities adverse to the competition. Additionally, this legislation established the Bangladesh Competition Commission and empowered it to investigate and prevent activity that would severely hinder competition (*The Competition Act, 2012*).

The Digital Security Act 2018 This was enacted to make provisions for ensuring digital security (or cybersecurity) by outlining methods for criminalizing a wide array of cyber activities (e.g., hacking, identity fraud, damaging infrastructure, along with influencing activities of disseminating propaganda or offensive material). The act also identifies the process for criminal investigations and judicial trials of such crimes. Additionally, it established the Bangladeshi Digital Security Agency to oversee and enforce this legislation along with a National Computer Emergency Response Team responsible for responding to and mitigating cyber incidents, and a National Digital Security Council responsible for advising and guiding the Digital Security Agency (*The Digital Security Act, 2018*).

IMPACTS OF COVID-19 PANDEMIC ON SMALL AND MEDIUM ENTERPRISES (SMES)

Over the course of the COVID-19 pandemic to date, Bangladesh has seen its economy continue to grow, but at the much more decelerated rate of 3.5% in FY2020 (as compared to 8.2% in FY2019). Since the Bangladeshi fiscal year ends on June 30, the effects include the national lockdown due to the COVID-19 global pandemic from March to May 2020. Of the SMEs, small enterprises (along with cottage and micro

levels) felt the sting of quarantines perhaps more than other businesses due to their size and composition but remain resilient (*Asian Development Bank, 2021*).

According to one interviewee, many companies in Bangladesh ended up going out of business. Workers had to go out on furlough, and businesses tried to survive with skeleton crews. In-bound tourism disappeared, which had a ripple effect on tourism-related SMEs. Nevertheless, as an externality of the pandemic, SMEs expanded their use of digital financial services and e-commerce (*Chowdhury, 2020*). The COVID-19 pandemic spurred a mini-digital transformation in Bangladesh, in both rural and urban areas, through increased reliance on digital marketing and digital payment systems. Indeed, SMEs adopted digital technologies and use more ICT than every before. One SME stated that they believed that the use of digital technologies even drove the price of some products down. Unfortunately, with the rise of digitization came an increase in cyberattacks in Bangladesh to include hacking, social engineering, and phishing, which enables a new opportunity and focus to be placed on cybersecurity governance, policy, laws, and SME cybersecurity awareness for the future.

Pandemic Relief

Bangladesh imposed a series of nationwide lockdowns to combat the pandemic. The first occurred during March – May 2020, relatively soon after the pandemic started, causing many enterprises to shut down and forcing revenue losses and unemployment. Businesses could reopen after the first lockdown, but the government imposed lockdowns again in July – August 2021 due to the Delta coronavirus variant. Due to the imposed series of nationwide lockdowns, the COVID-19 pandemic had a negative impact on the global, regional, and national economy.

In Bangladesh, the economy grew by only 3.5% in FY2020, which was the first time in several decades that the economy had grown less than 7.5% in any given year in terms of GDP (*Asian Development Bank, 2021*). Given the circumstances, the government of Bangladesh delivered on a “Trillion Taka Package” aimed at keeping the economy stable and combatting the financial struggles that were faced by the private industry. Recipients of the stimulus package offered by the Bangladesh government included entrepreneurs in the local and international markets, agricultural sector, cottage, micros, SMEs, and low-income groups. The first phase of the stimulus package was intended to keep entrepreneurs competitive, as well as to supply finances to make up for the deficit of working capital that could not be obtained during the COVID-19 pandemic (*Abdin, Upcoming Industrial Policy in the Post COVID Bangladesh, 2021*).

CHALLENGES TO DIGITIZATION

Socio-Demographic Disparities

This section presents some of the more significant disparities that exist throughout Bangladeshi population in terms of education and literacy, digital literacy, economic/financial, and gender inequalities. While the details of these disparities are presented below, there have been efforts to close these gaps by the Bangladeshi government and by foreign intervention such as assistance from the United States and localized NGOs and contractors. To provide one example, January 2019 saw the end of a 5-year long project to address employment and food insecurity in the Southern Delta region amidst a thriving high-tech agriculture industry. DAI's Agricultural Value Chains project leveraged the private sector firms'

and organizations' own interests and investment opportunities to drive more inclusive growth. By developing key partnerships and operational strategies between financial institutions, existing agricultural companies and farms, over 6,000 SMEs were able to thrive and grow, of which nearly half were women-led (*Miller, 2019*).

General Stratification Issues Like surrounding nations, Bangladesh's history has ingrained effects of systemic inequalities. Religious and other social influences marginalize people. Differences in geographic location as urban vs. rural areas, language usage, age, and gender affect access to technology, education, employment, financing, etc.

The digital divide in Bangladesh, is not dissimilar from the analogous social divide and exists along similar lines. It continues to create huge disparities and disadvantages for marginalized populations that lack access, awareness, and knowledge to use digital technologies. The socio-demographic dimensions of Bangladesh's digital divide have far-reaching implications for MSMEs and their consumers.

An op-ed in the Dhaka Tribune in December 2020 by an author studying ICT usage in service-oriented SMEs (*Rahaman & Chowdhury, 2016*) reveals insights into the public's perspective on the Digital Bangladesh program by suggesting the general readership might answer negatively to questions such as, “What has Digital Bangladesh meant for me? What effect has it had on my life between 2008 and now? Where is Digital Bangladesh?” (*Chowdhury, 2020*).

Food insecurity also exacerbates the digital divide in Bangladesh. As a major issue in the Southern Delta of Bangladesh, it poses a significant barrier to technology adaption throughout the region when survival becomes the most immediate issue for many people.

From intervention by NGOs, using partnerships and technology, many rural households and farms are now applying new technologies that have rendered a 131% increase in crop yield per hectare (Miller, 2019).

Disparities can also impact access to investment capital, which among other necessities, helps SMEs to purchase technology. Many small enterprises represent members of Bangladesh's digital "gig" economy or freelancers providing in the urban centers, conversely in the rural and semi-rural areas small enterprises primarily represent "contractors" who support the delivery of goods or finished goods. In some cases, the capital is difficult to access because of the identities of business owners and operators and all the associated issues that come with that such as access to education, knowledge of credit and finance, identity-based discrimination, and the like. Cut off from investments and knowledge among other core business needs, these owners run their businesses in the informal sector and hence are not only largely excluded from formal credit markets but also face high interest rates in informal lending sector (Masud, 2021). Since they generally lack collateral or formal records of business transactions, they have no ways of building credit scores to attain loans. Roughly two-thirds of all SMEs in the region would benefit from loans but are unable to obtain them. One intervention project, the Small and Medium Enterprise Development Project, has tried to focus on improving access to both short- and long-term credit with a specific focus on women-owned and rural area SMEs (Asian Development Bank, 2016). With loans come the ability to purchase technology and digital tools to enhance business productivity and revenue.

Gender Disparities Both our literature review and interviews pointed to many barriers that exist related to opportunities for women in Bangladesh. In the

SME industry, 72.4% of the SME workforce is male, with 96% of loans given to male-led SMEs (Asian Development Bank, 2016). For the rural, women-owned SMEs that do exist, they experience limited access to new ICT devices and have aged ICT devices that constrain their ability to conduct digital business operations. One interviewee mentioned that women entrepreneurs often face great challenges when it comes to overcoming cultural barriers. Women business owners often deal with a lack of respect and are not taken very seriously, while having to prove they are equally as good or better than their male counterparts. The interviewee also pointed out that there are no programs specifically dedicated to women entrepreneurs, which is evident in the data from SME Statistics (which also included Cottage and Micro enterprises) which shows 92.7% of entrepreneurs in Bangladesh are male versus only 7.3% which are female (2, 2022) (Bangladesh Bureau of Statistics, 2013).

Social barriers are prevalent in Bangladesh as women have fewer networking opportunities than men, and experience difficulties accessing finances. Causes for SME lack of finances stem from higher costs to serve SMEs, a lack of data for formal institutions to assess creditworthiness, and a lack of SME ability to back up loans with collateral. Women must overcome the social barriers that exist, but also the reluctance of financiers to back higher cost SMEs. As mentioned by one interviewees, family support is crucial for women to succeed in becoming SME owners and navigating culture barriers that exist in Bangladesh (1, 2022).

Challenges with (Digital) Business Functionality

The existing literature surveyed revealed little detailed information on the challenges of digital business functionality beyond the obvious situations where

SMEs failed to adapt. Insights from a 2016 study by Rahaman and Chowdhury on service-oriented SMEs using ICT provide a lens into the sorts of business functions that digitization has been successful and where it has been less helpful. Owners surveyed reported the most value for ICT lies in maintaining relationships with customers and saving operational time, and (to a lesser extent) maintaining relationships with suppliers and minimizing the cost of service (unit cost). The study, however, does not draw any formal connections as to the value realized by service-oriented SMEs in adapting ICT (*Rahaman & Chowdhury, 2016*).

Again, referencing insights from Rahaman and Chowdhury (2016), the study also revealed that SME owners currently using ICT found it less useful for sales and marketing, which at a cursory view may seem counter-intuitive (*Rahaman & Chowdhury, 2016*). However, the insights provided by the interviewee referenced above about digital marketing during the pandemic suggest that is a changing trend (1, 2022).

Challenges to Increasing Capacity with Digital Technologies

As digitalization efforts integrate its way further into the SME sector, establishing a digital strategy and having an ICT infrastructure that compliments organization processes will be the biggest differentiator between successful and unsuccessful companies. Technological advancements in digital payments offer many avenues for SMEs to conduct business, which has had a positive impact on business efficiency and the economy. Lastly, identifying security threats and breaches that target SMEs and ensuring that the optimal cybersecurity defense mechanisms are in place are critical to protecting organizational data.

Investment in Digital Strategy and Organizational Development Bangladesh is leading efforts to expand their ICT infrastructure by focusing on global expansion. In attempts to generate more ICT personnel, Bangladesh created embassies in other countries that have created more job opportunities for ICT related roles (*Kashem, 2021*). SMEs that have invested in ICT have had positive, long-term benefits that have directly impacted performance. A 2016 survey showed that 87.5% of respondents believed ICT greatly impacted their organization in a positive way. They cited benefits of using ICT as the ability to build and maintain relationships with customers, save operational time, maintain relationship with suppliers, minimize costs, and maintain communications. Figure 5 below illustrates SMEs that use ICT for business activities have shown greater growth in revenue versus SMEs that do not use ICT.

		Use of ICT for Business Activities		
		Yes	No	Total
Average Growth of Revenues for the last five years	< 0%	0	21	21
	1 – 5%	0	12	12
	6 – 10%	12	0	12
	11 – 15%	134	0	134
	16 – 20%	99	0	99
	> 21%	42	0	42
Total		287	33	320

FIGURE 5. REVENUE GROWTH ASSOCIATED WITH ICT UTILIZATION (*Rahaman & Chowdhury, 2016*).

In Figure 5, SMEs that reported using ICT for business activities experienced an average revenue growth over the last five years from 6% to over 21%, where SMEs that did not use ICT had less than 6% of average revenue growth in all cases. One interviewee stated that they use ICT heavily in their organization in all aspects of business operations which include advertising, sales, contracting, lead management, supply chain, financing, and accounting (2, 2022).

Many SMEs are still looking at finding new ways to utilize ICT to enhance business performance. One interviewee mentioned that they are seeking to establish relationships with global and international businesses that specialize in technological development in efforts to bring new technology to the micro, small, and medium enterprise market. Elaborating on their future strategy for business growth, this interviewee mentions desires to form relationships with suppliers that have mature technology platforms that can be used to improve asset visibility and bring new products to market. Working with suppliers that have advanced technology platforms will enable more sales to be completed domestically as well as globally (1, 2022). Another interviewee touched on the point that there are still limitations that exist when it comes to financial support from the government. The government does not have schemes in place to subsidize financial money to promote IT optimization, whereas if they did it could be used to fund IT professionals with advanced skillsets that could build a robust IT infrastructure that would help business continue to grow (3, 2022).

Digital Payments Digitalization efforts in Bangladesh paired with the shift to a heavy reliance on an advanced IT infrastructure during the COVID-19 pandemic has led many MSMEs to transition to a digital payment mechanism for many of their

transactions. As one business owner stated in our interview, utilization of digital payments in the region have continued to grow. Bangladesh has completely revolutionized and revamped their financial services. Growth is exponential with approximately \$1 billion USD in transactions occurring daily. This business owner mentioned that their company uses an approved banking system and digital payment system, while many other business owners in the region have also adapted mobile payment methods and often make payments and send money using QR Codes (1, 2022). Another interviewee mentioned that they are using Wize for their digital payment application on mobile devices (2, 2022).

The shift to a mobile payment approach comes with it significant risks. Hacking and security breaches are two major issues that have plagued companies over the years in Bangladesh with their IT infrastructure (Masud, 2021). Relying heavily on digital payment methods only increase these risks; which makes it important to have widely available digital literacy training, better connectivity, ready access to devices such as laptops and mobile devices, and a financial infrastructure that can handle timely transactions.

Digital Security From our interviewees and internal research, it was found that many SMEs in Bangladesh have trouble overcoming digital security issues. One interviewee mentions that hacking and phishing are two very common attacks that SMEs face. There are privacy and security gaps that often exist at both the individual and institutional level that make it difficult for SMEs to protect their data amidst digitalization efforts (1, 2022). Another interviewee mentions their own experience dealing with digital security issues stating that subcontractors of their organization have been victims of phishing and the company experienced a financial loss as a result. It was mentioned that

this organization had no way of protecting itself and that there were no cybersecurity defense practices put in place for defense other than sharing lessons learned on attacks that had occurred in the past. No formal cybersecurity system or software was put in place to help combat these attacks (2, 2022). SMEs and organizations that we were able to speak with provided a wish list for improving digital security which include sustainable technologies, digital platforms for ecommerce, branding education and development to enable freedom of access to global sale and marketing access platforms, and developing public private partnerships between government, NGOs, and SMEs in the region.

Challenges to Cultivating a Tech Forward Culture

Cultivating a tech-forward culture—meaning continually improving awareness of technologies and their applications, basic digital literacy, and access to digital technologies, and hiring and retaining tech-savvy talent—is a challenge for SMEs.

Digital Awareness and Receptivity Presently, most of the nation's economic clusters use technology from the middle of the last century. As such, productivity tends to be lower and product quality is typically inferior to that of other global competitors, which impacts market demand both domestically and internationally. So many SME owners focus more on maintaining or improving existing processes and don't seek to engage ICT that may not be directly suited to their business needs. Research on internet usage in SMEs suggested that around half do not use the internet for business because of lack of fit with their products or business processes.

Additionally, business owners in some sectors have very little knowledge about measuring product quality

and international quality certification systems, further limiting market potential. They fail to recognize the value in adapting digital technology to modernize their businesses (Abdin, *Role of SME clusters in Bangladesh economy*, 2018).

Access to ICT and Digital Technology ICT and digital technology in Bangladesh face key barriers including a lack of an ICT infrastructure and financial support that prevent access to these resources for SMEs (Hoque, Saif, AlBar, & Bao, 2016). Despite bank lending in Bangladesh tripling between 2010 to 2016 for SMEs, most SMEs do not have access to formal finance. Access to formal finance by MSMEs is limited compared to the average for the South Asia region with an estimated financing gap of Bangladesh Taka (TK) 237 billion (World Bank Group, 2019). Difficulty in formal finance stems from high lending rates, strict collateral requirements, and complicated application procedures that are often associated with SMEs. Additionally, banks in Bangladesh do not tailor their products and offerings to meet SME needs making it much harder for SMEs to succeed (Abdin, *Role of SME clusters in Bangladesh economy*, 2018).

Despite the challenges that SMEs face with expanding use of ICT, Bangladesh has placed efforts to expand infrastructure and accessibility to digital technologies in the region. Mobile devices, including smart phones and tablets, remain the primary internet connected technology devices for rural SME owners. The largest improvements occurred during the COVID-19 era as mentioned by one of our interviewees that stated, the government of Bangladesh made subsidies for citizen affordable access while businesses and government both made large infrastructure investment into internet connected access for business and consumers (2, 2022). Also, our interviewee mentioned that

improvements to local technology have drastically improved in the last 10 years with new access to broadband, DSL, and other wireless connected technologies locally. These improvements have started to show in Bangladesh, beginning with mobile phones where in 2009 only 20 million citizens possessed a mobile phone, however, in 2021 120 million citizens do (*Wazed, 2021*). Digital expansion has also made its way to remote portions of Bangladesh with millions more having access to high-speed internet connections in remote villages.

Although Bangladesh is placing concerted efforts on improving the use of ICT and digital expansion, SMEs still have their limitations outside simply a lack of financial support as mentioned earlier. An interviewee mentions that technology access and use are areas that are preventing their organization from continuing to grow in Bangladesh. For example, there is a mix of technology in use which causes redundancies and inefficiencies, the interviewee reported that many SMEs have yet to formally adopt integrated accounting and inventory platforms. They are not yet using technology on a broad scale to market outside of their local areas and sometimes revert to selling to wholesalers who bring their products to market across the country for them (*1, 2022*).

Finally, many SMEs are discouraged from adopting ICT due to system life cycle costs. Like with everyone, SME owners are concerned with ensuring that ICT benefits outweigh the costs of developing and maintaining the system. In many contexts, complete development costs can be much more easily estimated and compared to budgets. The study found that many SMEs cannot afford to adopt sophisticated ICT tools (*Dewan & Nazmin, 2008*). However, estimating benefits, or return on investment, requires anticipation

and thus depends highly on the perspective and knowledge of the SME owner.

Knowledge Knowledge and adoption of ICT and digital technology is clearly increasing, urged on by market demand for modernized offerings and direct experiences with the global pandemic. Consumer demand continues to favor more attractively designed, imported products even if they are of a lower quality with higher pricing than the same product lines offered by domestic SMEs. Almost all domestic SME clusters suffer from limited knowledge of design principles and the associated technology. As mentioned previously, many Bangladeshis adopted digital tools to send and receive money, pay fees, etc. during the nation's lock-down periods to maintain lifestyle normality and limit contact with others (*1, 2022*). Some prominent digital services include: bKash, Rocket, MyCash, tap, SureCash, Ok Wallet, and Megha Bank Tap-n-Pay (*Masud, 2021*).

Beyond experiences during the pandemic, research indicates that SMEs are increasingly experiencing customers attempting to engage their business by using e-mail for placing or confirmation of orders. While still many regular customers lack (or prefer not to use) internet means to engage SMEs, there is some indication that this may be slowly changing (*Dewan & Nazmin, 2008*).

While government bureaucracy can hinder the effective administration of foreign assistance programs, targeted efforts by NGOs have started to help nudge change. DAI, worked in Bangladesh's Southern Delta region developing technology-based systems for SMEs for connecting to wider customer markets and services in finance, marketing, and information and communication technology to ensure a fully integrated process between the organization

and potential consumers (*Wazed, 2021*). Additionally, the government of Bangladesh has emphasized digital awareness and connectivity with its people in a similar fashion by focusing its entire digitization efforts on e-governance and ensuring that all government resources, information, and services remain readily accessible online (*Wazed, 2021*).

Training and Upskilling Another impediment to SME digitization is lack of technically skilled labor investment in skills training, and talent development throughout a community is often needed to encourage wide-spread technology adoption (*Centre for Research and Information, 2017*).

In Bangladesh, there are many instances in which communities across the region have struggled to develop a workforce with advanced digital skills. One of our interviewees mentioned that the government of Bangladesh does not effectively administer programs that support SME access to digital technology tools, digital up skilling, or cybersecurity awareness. To continue further, this interviewee mentioned that their company continues to have ongoing issues with individuals lacking IT resources and knowledge that are needed to perform day-to-day operations. Another interviewee stated that many micro industries in the area have employees that lack basic skills such as accounting, record keeping, and asset tracking that cause limitations to apply to government programs and perform operations (*1, 2022*) (*2, 2022*).

The COVID-19 pandemic has changed the way training programs and skills development have been implemented in recent years by offering new avenues for learning. Bangladesh has begun to retool its entire educational system by putting in new training programs with the intent to develop a highly skilled, digital-ready workforce. Graduation rates have

begun to rise over recent years with Bangladesh now graduating 500,000 workers annually which include over 65,000 information technology professionals (*Wazed, 2021*). The administration of SME digital literacy and digital up-skilling programs have proven to be highly effective in urban districts during the pandemic through newly developed online training programs. Additionally, the national Chamber of Commerce and trade associations are proving an effective institutional connection for SMEs to network and share knowledge and programming related to SME digital literacy and up-skilling. Government digital literacy training and workshops (including cyber awareness and security) that are developed for rural SMEs could be best administered through local medium sized enterprises, trade associates, or local chambers of commerce who represent the connective tissue to small sized enterprises.

Hiring and Keeping Technical Talent Through our research and interviews, it was evident that SMEs suffer from a lack of availability of ICT skilled personnel. Further impacting the lack of availability of highly skilled staff is the struggle Bangladesh has faced with administering the proper training programs that produce high quality staff. In addition, staff that are already integrated within SMEs generally focus on day-to-day operations and lack the time to understand the benefits of learning new technologies, instead they are focused on immediate outcomes and results. Even when staff are made aware of the potential benefits of learning new technologies, they still have limitations that require qualified personnel to train them and invest time, which many current SMEs lack. (*Dewan & Nazmin, 2008*).

Studies have shown SMEs that have successfully adopted new ICT tools have frequently had someone

within the organization that has a reasonable amount of knowledge of the specific technology that is able to collaborate with other SME personnel to train them (*Dewan & Nazmin, 2008*). In many cases, the study found that this person was not necessarily an ICT professional, rather, they tended to be individuals who were passionate and genuinely interested in the new technology. Most ICT adoption typically comes from SMEs that are working in the field of electronics or engineering which tend to be heavily technology focused. It is important throughout SMEs that hiring strategies are aligned to ensure members of the organization have an ICT background or passion for ICT that can be shared across the organization. Also, spending time and effort into training current personnel on new technology benefits on the entire organization as information and lessons learned can then be shared throughout.

CONCLUSIONS

There are a clear set of advantages that can be realized by SMEs when adapting modern digital technology. Technology enables businesses to understand customer needs and improve products and services to reach new markets. It enables opportunities to increase productivity through automation, even on the most basic levels, which can improve production speed and quality, and lower operating costs. Technology enables easier access to available workforce and job opportunities. Finally, it enables businesses to manage risk by increasing security of business finances and data (*Khan, 2021*). However, major challenges currently facing many Bangladeshi SMEs presents a formidable barrier to the adoption of appropriate modern technologies.

Limited Awareness of Technology

Presently, most of the nation's economic clusters use technology from the middle of the last century, let alone modernized digital technologies like ICT. As such, productivity tends to be lower and product quality is typically inferior to that of other global competitors, which impacts market demand both domestically and internationally. Additionally, business owners in some sectors have very little knowledge about measuring product quality and international quality certification systems, further limiting market potential (*Abdin, Role of SME clusters in Bangladesh economy, 2018*).

Consumer demand continues to favor more attractively designed, imported products even those with lessor product quality and higher pricing than the same tired product lines offered by domestic SMEs. Almost all domestic SME clusters suffer from limited knowledge of design principals and the associated technology.

Additional pressure to adopt digital technology has come from the experiences with the COVID-19 global pandemic. Many Bangladeshis adopted digital tools to send and receive money, pay fees, etc. during the nation's lock-down periods to limit contact for infection (*Masud, 2021*).

**TECHNOLOGY
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Technology Adoption Barriers are Too High

Even though the overall attitude is favorable that ICT is helpful to all enterprises, most SMEs have limited utility for adopting ICT in business ventures (*Rahaman & Chowdhury, 2016*). SMEs in Bangladesh invest very little on information systems and are not concerned with developing digital systems/adoption. Major rationale centers on adoption effort efficiency, technology performance efficiency, and a general lack of trust of new technology which has been found to be overcome by social influence. The introduction of ICT applications along with ease of use and knowledge of benefits by trusted peers are key success factors in deciding to adopt ICT (but also can be heavily discouraging of ICT adoption) but explain the current low levels of adoption as technologically savvy peers are in very short supply (*Rahaman & Chowdhury, 2016*).

Additionally, when faced with the option of adopting ICT, many SME owners find it difficult to accurately gauge a positive return on investment. Costs to acquire and develop ICT systems to fit their business needs are reasonably easy to estimate, followed by maintenance and upkeep. However, anticipating future benefits are harder to estimate due to limited knowledge and awareness or contextual examples and, thus ICT is viewed as risky (*Dewan & Nazmin, 2008*).

Lack of Technically Skilled Labor

Many SME clusters have the potential to adapt and modernize within their sector but are hindered by the lack of available technically skilled labor. Businesses experience high turnover of technically skilled labor, which in turn discourages owners from directly investing in developing technically skilled workers at their own cost. This results in productivity and product quality across sectors to remain relatively stagnant.

High Financial Risks to Owners and Investors

Additional barriers to digital technology adoption in Bangladesh center around the costs and availability of adequate and reliable ICT service, particularly in rural areas. Additionally, SME business developers cite the limited access to technology finance (or availability of financial support) as a major barrier to ICT adoption. The lack of adequate and reliable infrastructure poses additional cost factors on the willingness to engage new technology due to the burden of the associated financial risks (*Hoque, Saif, AlBar, & Bao, 2016*).



COUNTRY CONTEXT

Nepal is one of the least urbanized countries in the world, with only 20% of the Nepali population living in urban areas (*Organization, 2022*).

Most infrastructure and socioeconomic development in Nepal are centered in a few large cities, while people in remote rural areas continue to struggle with relatively poor infrastructure and limited access to basic services such as healthcare, education, and financial services. Additionally, it is a relatively young democracy, having adopted its new constitution in 2015. This has led to challenges coordinating and communicating among central, provincial, and local governments, as well as creating and implementing complementary policies and processes.

Due to its landlocked positioning between the People's Republic of China to the north and the Republic

of India to the south, west, and east, Nepal has a difficult time both importing/exporting goods and manufacturing its own materials. Nepal lacks the natural resources that both China and India have, and therefore must import raw materials—a process which is expensive due to the increased costs of raw materials and complicated transit routes, as Nepal has no ports and must rely on slow-moving rail systems and vehicular transit. As a result, Nepal often relies on Sri Lanka, China, and India for raw materials and means of import/export across its five development regions, 14 zones, and 77 districts.

In 2020, Nepal's GDP stood at \$33.66 billion USD with per capita Gross National Income (GNI) averaging \$1,090 USD. Prior to COVID-19, Nepal's annual growth rate for GDP was over 4% per year. Post-2020, with the emergence of COVID-19, Nepal's annual growth fell into the negatives, hovering at -2% (*USAID, 2020 – 2025*).

Food industry, handicrafts, agriculture, and tourism are the most common industries in Nepal. In 2017,

the agriculture sector employed 70% of the population and contributed 26.41% of GDP (*Government of Nepal Ministry of Communication and Information Technology and Frost & Sullivan, 2019*). Nepalis in rural areas continue to struggle to establish and market their businesses; however, it is possible that the COVID-19 pandemic presented an opportunity for Nepalis to turn to digitization when in-person transactions were not possible.

Though Nepal has numerous entrepreneurial policies and established digital frameworks, it struggles to implement these policies at local levels. Lack of access to funding and digital literacy, inability to access local and foreign markets, and structural and bureaucratic processes remain barriers to further digitization and growth of Nepali SMEs. This section examines these barriers and provides recommendations on how future interventions could help increase digital adoption by SMEs.

OBSERVATIONS

The following sections describe the economic target enterprise classes of SMEs and their overall roles in Nepal’s economy. The section also includes high-

level observations regarding the overall attitudes and challenges toward SMEs’ adoption of digital tools.

MSME Definitions and Distributions in Nepal

In Nepal, the term “SME” commonly refers to micro, small, and medium enterprises (MSMEs). Most enterprises in Nepal are classified as either micro or small. Only a very small number of small enterprises eventually make the jump to medium-sized enterprises (53, 2021). The average SME in Nepal employs 8 – 14 people (57, 2022). Most businesses in Nepal are informal, family businesses, the majority of which are not officially registered as businesses with the government. Approximately 94% of Nepali workers are considered informal workers—not paying taxes and not benefitting from government incentives and programs (Vargas A. M., 2020).

The Nepali Industrial Enterprises Act of 2020 defines micro enterprises using four criteria (capital investment, employment, annual turnover, and energy consumption), while it uses the single criterion of capital investment to define SMEs. The Act also includes the category of “cottage industries,” which includes enterprises in specific industries. The definitions of micro, small, and medium enterprises are shown in Table 3.

TABLE 3. NEPAL’S DEFINITION OF MSMES (Source: Nepal’s Industrial Enterprises Act of 2020)

Criteria	Micro	Small	Medium
Fixed Capital	Up to NPR 2M, excluding land and buildings (~\$18k USD)	Up to NPR 150M (~\$1.3M USD)	NPR 150 – 500M (~\$4.4M USD)
Annual Turnover	Up to NPR 10M (~\$89k USD)	Not Specified	Not Specified

As aforementioned, cottage industries are enterprises that use local workers and raw materials, engage in traditional labor-intensive industries that reflect the country's indigenous arts and culture, and must consume less than 50 kilowatts of electrical power when operating at full capacity. Figure 6 shows the contribution of SMEs, to include cottage industries, in Nepal; Figure 7 shows the number of cottage and small industries registered in Nepal each fiscal year from 2011 to 2016.

MSME's Contribution in Nepal	
Contribution	Percentage
Share of Industrial GDP	90%
Share of Industrial Sector Value Addition	70 – 80%
Share of Industrial Employment	80%
Share of Industrial Export	80%

FIGURE 6. MSME'S CONTRIBUTION IN NEPAL
(Federation of Nepal Cottage and Small Industries (FNCSI))

Cottage and Small Industry	
Fiscal Year	Number of Cottage and Small Industries Registered
2011 – 2012	18,022
2012 – 2013	15,556
2013 – 2014	22,129
2014 – 2015	17,654
2015 – 2016	24,317

FIGURE 7. NUMBER OF COTTAGE AND SMALL INDUSTRIES REGISTERED IN NEPAL PER FISCAL YEAR
(Audhyogic Tathyanka 2072/73, Department of Cottage and Small Industry (DCSI))

SMEs of Nepal and Their Role in the Economy

Leading industries in Nepal include tourism, agriculture, food and beverages processing, and textiles. The largest industry by employment is wholesale and retail trade, which accounts for 30.6% of the total employment in the country, followed by education with 15.9% and manufacturing with 15.8% (Government of Nepal Central Bureau of Statistics, 2021). Small enterprises dominate manufacturing with 98% of manufacturing enterprises categorized as small businesses (Dahal, July 2020). Nepal's tourism industry provides 371,140 jobs, representing 11.5% of persons engaged in all industries in the country (Prasain, 2021).

The vast majority of businesses in Nepal, especially small-scale businesses, operate without official registration knowingly or unknowingly (although laws require any business in Nepal to be registered). The 2018 Nepali census reported a total of 923,356 Nepali businesses—95.5% microenterprises and 4.2% small enterprises—with only half formally registered (UNCDF, 2020). Sixty-two percent of the economically active population in Nepal are part of the informal economy. They are shut out of the formal economy by lack of financial access and insufficient infrastructure (S.T Karki, 2021).

The lack of formalization among Nepal SMEs remains an issue, despite Nepal policies that favor formalization. Government regulations require enterprises with less than \$10 million Nepalese Rupee Rates (NPR) (equivalent to \$130,277 USD) of fixed assets to register with Department of Cottage and Small Industries (DCSI) and those with more assets to register with the Department of Industries (DOI). Barriers to registration include perceived lack of value and required permission from landlords or male family members (S.T Karki, 2021).

In terms of labor, Nepal recently extended labor law coverage to SMEs, however, child labor continues to be a recurring problem in Nepal despite this and other government intervention programs (*Vargas A. M., 2020*).

Local chambers of commerce, which promote local industries, tend to be agnostic regarding industry sectoral focus and promotion. Local chambers often focus on the relevance of an upcoming industry, and give preference to businesses that focus on women, security, young people and rural (*52, 2021*).

Nepal SME-Related Business Membership Organizations

The following are the three main business membership organizations of which SME owners are members:

- **Federation of Nepalese Chambers of Commerce and Industry.** This organization promotes the economic and social development of Nepal while protecting and defending the rights and interests of the business persons of the entire country, acts as a supreme representative body of the trade and industry of the country while supporting the national goals, and fosters cooperation with related national and foreign organizations (*Federation of Nepalese Chambers of Commerce and Industry, n.d.*).
- **Federation of Women Entrepreneurs Association of Nepal (FWEAN).** FWEAN provides opportunities for women to market their products at fairs and expos, offers training for women to upgrade their skills and expand businesses, and functions as a collective advocacy voice for the country's thousands of women entrepreneurs.
- **Federation of Nepalese Cottage and Small Industries (FNCSI).** FNCSI is the preeminent national organization that works with SMEs and

lobbies the government on their behalf. FNCSI promotes indigenous crafts such as carpet-making, metalworks, and handloom garments of raw wool, silk, and cotton (*Federation of Nepalese Chambers of Commerce and Industry, n.d.*). FNCSI background and work:

- Predominantly focuses on micro and small enterprises in rural Nepal.
- Started in 1990. At its inception, 465,000 SMEs registered with FNCSI. After two years, only 250,000 SMEs renewed their registration. Over 11,000 women are currently registered in FNCSI.
- FNCSI serves Nepal's 7 provinces and 77 districts and is working toward meeting the needs of all 753 municipalities (currently, FNCSI works with 300 municipalities) (*53, 2021*).
- FNCSI has established women's committees in each of the 77 districts. FNCSI also works with various community associations—in total, over 140,000 members representing micro, cottage, small, and medium enterprises.
- FNCSI spends the majority of its time addressing key SME-related policies and building capital to support SMEs. FNCSI continues to raise capital to put toward members' use creating and being trained to use digital platforms (*53, 2021*).

Nepali Digital Adoption—Infrastructure (Digital and Physical)

Rural areas have less digital and physical infrastructure than urban areas in Nepal. However, Nepal's overall internet users and connectivity rate is 63% and grew by more than 6% annually in the 2010s. It added more than two million new internet users between 2017 and 2019. Nepal's mobile phone penetration rate is greater than 100%, due to the

fact that many citizens own more than one phone, and it is regional leader in these areas (*Government of Nepal Ministry of Communication and Information Technology and Frost & Sullivan, 2019*). (When analyzing mobile phone penetration statistics, data is presented as a percentage and can exceed 100% if the number of SIM cards in the country is higher than the actual population number.)

Despite these successes, several challenges remain to improving access and quality of internet connectivity. Foremost, rural areas suffer from either poor quality or no internet. Approximately 60% of internet connections are made using mobile connections, and more than 90% of Nepal's internet users rely on older, lower quality second and third generation technologies (2G, 3G). More reliable, stronger, and fixed line broadband connections are primarily available in large urban areas. The fact that digital content in local languages is sparse, compounds the challenges felt in rural areas with lower quality or limited connectivity (*Government of Nepal Ministry of Communication and Information Technology and Frost & Sullivan, 2019*). One interviewee cited unpredictable electrical power as a significant barrier to using digital devices and applications in their business (*57, 2022*).

Addressing these challenges is a part of Nepal's 2019 Digital Strategy to improve the digital ecosystem in the country. A first step is to invest public funds and attract private funding to the development of a more robust network of fiberoptic cables and fourth generation (4G) technologies. Nepal started this process in 2017, and despite the delays and challenges posed by the pandemic, garnered multiple investments that many believe will ultimately lead to increased economic growth that results from attracting more internet service providers and enabling increased adoption, skills, and access to

growth-oriented services such as digital payments and e-commerce (*Government of Nepal Ministry of Communication and Information Technology and Frost & Sullivan, 2019*). As an example of the successes of this strategy, Nepal attracted investments by ISP WorldLink Communications and a Singapore-based company to develop 14 data centers and deploy technologies that expand and improve internet services particularly in historically underserved areas (*Barton, 2021*).

Digital Security All companies that adopt digital technologies as part of their workflows are vulnerable to cyberattacks, and MSMEs are no exception. Certainly, the COVID-19 pandemic increased the digital security risks to many Nepal SMEs, as they turned to online technologies at an increased rate to find customers and sell their products.

A 2020 hacking incident highlighted security flaws in multiple aspects of Nepal IT infrastructure at all levels (*Nepali Telecom, 2020*). The emphasis on digital security is not new, nor are Nepal government officials and businesses blind to potential digital threats. In 2018, Nepal government officials, financial representatives, and SME owner/operators met with Microsoft to discuss digital transformation and cybersecurity. As part of this meeting, Microsoft explained the risks of pirated software to SMEs, and how SMEs could better protect themselves (*ICT Frame, 2018*). Nepal continues to make progress in this area, evident from ranking 94th in the 2020 ITU Global Cybersecurity Index (GCI), as opposed to their 2018 ranking of 106th. The GCI is a composite index based on five areas: legal measures, technical measures, organizational measures, capacity development, and cooperation (*The Kathmandu Post, 2021*). Though many Nepali SMEs are new to digital technologies (and their corresponding security risks), some SMEs

are aware of such risks and are taking active steps to mitigate them. In one case, a Nepal SME reported to us that it engages a third-party company to track phishing emails sent to them, as well as intrusion attempts against their internal network (56, 2022). However, it is unlikely that this is common for SMEs who, first, may not be aware of such services, and second, may not have the capital to invest in such protection.

Given this present (and growing) threat to SMEs, particularly as more SMEs adopt digital tools and make use of online services, it may be beneficial for SME assistance organizations to engage with Nepal's Community Emergency Response Team (NPCERT) to develop SME-specific digital security training modules, and to include basic cybersecurity awareness training as part of their digital literacy offerings for SMEs.

Further, the Nepali government can increase the digital security of Nepal SMEs and their ability to defend against threats through formalized legal frameworks and regulations for data protection, such as finalizing the draft National Cyber Security Policy 2021. The government (and SME assistance organizations) can also develop, implement, and publicize technical guidelines for securing hardware, software, and cloud-based assets, to ensure all stakeholders are aware of and using international best practices for digital security (*Nepali Telecom, 2020*).

Relevant Public Policy and Federal Legislation

The sections below lay out how the Nepali government developed policy and legislation to promote and grow digital technologies within SMEs over the past decade.

Public Policy and Strategy

As detailed below, Nepal has established a multitude of ministries, departments, and frameworks to address

SME issues in order to build their economic status within the country. However, responsibility for SME-related topics is spread too thin, over far too many organizations, leaving unclear roles and responsibilities and creating a system whereby implementing policy and creating accountability for doing so is very difficult. Several interviewees emphasized that Nepal did not lack for digital policies or established ministries; however, that the government of Nepal has a difficult time implementing and localizing the policies and frameworks that they do have.

Relevant Government Organizations

There are various government organizations that support the economic growth and the technological modernization of SMEs across Nepal. As an example, provincial mayors allocate money to local entrepreneurial incubators in the attempt to establish better connections with local industry SMEs. Despite efforts to connect the various levels of government with SMEs, this continues to be a difficult task (52, 2021).

SME Economic Growth Organizations

The National Planning Commission (NPC) has emerged as a leader and principal advisor in the economic development and economic affairs of the country in addition to national planning and programming (*Government of Nepal, National Planning Commission, 2022*). Beyond this, the Nepal Ministry of Industry—Commerce Supplies (MOICS) is essentially the primary ministry that handles SMEs in Nepal. MOICS has several departments that directly support SME development, such as the Micro, Cottage, Small Industry Promotion Center (MCSIPC), which has been established as a permanent federal institution to develop and promote SME growth and coordinate assistance and programs of donor agencies.

Also within MOICS is the Department of Cottage and Small Industries (DCSI) to promote and foster various kinds of cottage and small industries and enhance their industrial productivity. The Cottage and Small Industry Development Committee (CSIDB) in the DCSI is responsible for providing training, dispersing loans, and establishing specific industries and the associated distribution of manufactured goods (*Cottage and Small Industry Development Committee, 2022*). The MOICS Industrial and Investment Promotion Division operates and supports the Nepal Micro Enterprise Development Programme for Poverty Alleviation (MEDPA), a United Nations Development Program-sponsored program. The government of Nepal now supports MEDPA, operating the program across all local levels of the country and allocating grants to SME owners in rural areas (*Industrial and Investment Promotion Division, 2022*).

SME Modernization Organizations

Additional governmental organizations support SME adoption of ICT. The Ministry of Communication and Information Technology (MOCIT)'s National Information Technology Center makes information technology accessible to the general public for the public welfare, e-governance, and economic and industrial modernization in Nepal.

MOICS also works in coordination with MOCIT to craft and implement digitalization initiatives and, via the DOI, implements policies, laws, and regulations related to Nepali industrial development. They also coordinate foreign investment and technology transfer in industry as well as protection of industrial property (*Government of Nepal Ministry of Commerce and Supplies Department of Industry, 2021*).

Relevant Legislation

In recent years, the Nepali government passed several bills and frameworks designed to foster digitization and assist SMEs. They include:

- **Industrial Enterprises Act, 2076** (2020). In addition to creating designations for MSMEs and cottage industries, the Industrial Enterprises Act includes reforms aimed to promote business growth, modernizing regulation and enforcement, and formalizing enterprises in Nepal.
- **Information Technology Bill 2075**. In 2019, Nepal passed its Information Technology Bill 2075. This legislation addresses cybercrimes and regulates collection of user data. The bill strengthens online user protections by forcing digital service providers to disclose their processes for collecting user data, the uses of user data, mandates provisions for the deletion of user data, and provides confidentiality protections. The bill also provides content moderation and removal policies to avoid negative social, emotional, or health impacts on users (*Rana & Yonzon, 2019*).
- **Digital Nepal Framework 2019**. The Ministry of Communication and Information Technology published the Digital Nepal Framework—an extensive strategy document—in 2019. In this framework, Nepal predicted it would become a regional leader in internet penetration and adoption. In anticipating this level of internet growth, the country developed frameworks to identify ways in which digital adoption and improved skills could aid growth prospects in eight sectors: urban infrastructure, finance, tourism, energy, education, health, agriculture, and digital foundation. The framework establishes 80 digital initiatives with goals ranging from improving affordability and access to digital infrastructure, enhancing

educational experiences using digital technologies, increasing access to finance, capital, and financial education, and applying technology to these sectors (*Government of Nepal's Ministry of Communication and Information Technology, Frost and Sullivan, 2019, p. 2*).

- **National Broadband Policy 2016.** This is a framework for simulating broadband access. (*Government of Nepal Ministry of Communication and Information Technology and Frost & Sullivan, 2019*)
- **National ICT Policy 2015.** This policy seeks to transform the country into a knowledge and information-based society (*Government of Nepal's Ministry of Communication and Information Technology, Frost and Sullivan, 2019*).
- **Electronic Transaction Act 2063 (2008) and Electronic Transaction Rules 2064 (2007).** Nepal's Electronic Transaction Act 2063, issued in 2008, set the policy framework for modernizing and securing digital payment systems. Through this Act, Nepal established regulatory bodies to oversee electronic transactions and continually update the cybersecurity, intellectual property, and confidentiality policies that are involved with payment systems (*RatoJob, 2008*).
- **The 2007 Electronic Transactions Rules 2064** improve the security capabilities of digital transactions by ensuring transactions stem from and reach the intended entities (*Tech Sanar, 2007*).

IMPACTS OF COVID-19 PANDEMIC ON SMALL AND MEDIUM ENTERPRISES (SMES)

Impacts of COVID-19 on Nepali SMEs and relief of the SME sectors most affected, those directly associated with tourism and mountaineering, and localized

economic clusters supporting these businesses, saw precipitous drops in economic activity due to pandemic-related travel bans and lockdowns (*World Bank, 2020*). Research on a sample set of Nepali SMEs indicates that roughly three out of four SMEs have faced substantial loss of sales and major disruptions of their supply chains; however, the same fraction of SMEs has experienced fewer problems associated with labor shortages (*Dangol, Chitrakar, & Yoo, 2020*).

In their response, the Government of Nepal issued income tax exemptions and low interest rate loans during the COVID-19 pandemic to alleviate economic strain on businesses in several industries (*Dangol, Chitrakar, & Yoo, 2020*). These exemptions have varied based on the industry and size of the enterprise but nevertheless have provided substantial tax relief. Many SMEs and women-owned businesses in agricultural, manufacturing, service, and tourism sectors received exemptions ranging from 25 – 75% (*Shrestha, 2022*).

The Nepali group One to Watch launched the COVID-19 SME Fund Nepal with support from the Swiss Agency for Development and Cooperation and in partnership with NMB Bank and Laxmi Bank. The Fund was designed to give collateral-free loans to micro, small, and medium-sized Nepali firms deemed likely to rebound post COVID-19. In addition, the Fund planned to cover up to 18 months' worth of loan interest and to provide customized business development support. Up to 100 micro, small, and medium enterprises were expected to benefit from the Fund (*Nepali Times, 2020*).

COVID-19 has pushed Nepali SME owners and entrepreneurs to use Facebook Live, Tiktok, and YouTube to learn marketing skills and new ways to

advertise and approach their businesses. Business owners rely on using apps like Viber, WhatsApp, and Facebook Messenger to communicate with their customers and market their goods. Prior to COVID, many of these SME owners did not have email addresses (52, 2021). While digital improvements have helped market SME goods, industries like the garment industry lost over \$125 billion NPR because of COVID-19. SME operators' travel was restricted, and raw materials were stuck at borders, factories, and warehouses (55, 2021).

CHALLENGES TO DIGITIZATION

Socio-Demographic Disparities

This section presents some of the more significant disparities that exist within Nepal that impact education and literacy, digital literacy, economic/financial, and gender inequalities. While the details of these disparities are presented below, there have been efforts to close these gaps by the Nepali government, namely through the establishment of above-mentioned government agencies and legislation.

Like surrounding nations, Nepal history has ingrained effects of systemic inequalities. Religious and other social influences marginalize people. Differences in geographic location as urban vs. rural areas, language usage, age, and gender affect access to technology, education, employment, financing, etc.

Gender Disparities Nepal is renowned in South Asia for its high rates of female labor force participation, and the International Labour Organization estimates that 55.7% of the total workforce in Nepal is comprised of women, mainly in the agricultural sector (International Labor Office, 2017). More than one quarter of the SMEs are managed by women.

However, 2019 data shows women own only 3% of micro, small, and medium-sized enterprises. Nepal also has the highest participation of women in the informal economy compared to other South Asian countries.

Barriers to wider economic participation include limited access to finance, limited infrastructure for information and communications technology, lack of financial and business knowledge, and existing social norms (UNCDF, 2020). Forty percent of Nepali women are literate (S.T Karki, 2021). Accessibility of devices such as smart phones and tablets, devices that are more expensive, are difficult for rural citizens, particularly women, to acquire. Most rural families have at least one phone; however, women members of the family do not necessarily have a phone to themselves.

The proportion of female limited liability company proprietors almost tripled from 4% in 2012 to 11% in 2016 – 2017. However, the widespread practice in Nepal of surrogate entrepreneurship—in which a woman registers her husband's company in her name or takes out a loan on behalf of a male family member—creates challenges for capturing and interpreting quantitative data on female participation in the private sector.

Women's roles within their religions and in society can at times restrict their ability to socialize with men outside of the family. These limiting circumstances might keep women from educational opportunities to learn more digital skills—educational classes, professional opportunities, or even seeking IT professional help.

Rural vs. Urban and Age Younger people are leaving their family businesses and traveling outside of Nepal for education and work in foreign companies, where there are larger markets. Older generations do not

have such opportunities for formal education and/or foreign travel to pursue more profitable businesses. While phones, many of them being smart phones, are readily accessible to older and more rural Nepali people, younger generations often provide the training and know-how to older generations so that they may benefit from fintech, apps, and social media.

Younger persons are focused more on digital and IT issues such as online platforms and cloud management services. Younger generations seek out opportunities to live in large cities where they can obtain digital skills, as they understand the importance of having them. Many older generations, past college-age, seek to use digital tools namely for social purposes, payment mechanisms, and a means to market their SMEs' goods.

Language Literacy Nepal has made significant progress in improving their literacy over the past few decades dating back to 2001 when only 48.6% of adults were found as literate. In 2018, Nepal's adult literacy rate had increased to almost 68% (*UNESCO, Nepal Literacy Rate, 2022*). According to Nepal's national census, as of 2018, over 122 languages were actively used in Nepal, leaving the region with a massive linguistic diversity (*Fillmore, 2019*). This presents a challenge to the illiterate population of Nepal that are already at a disadvantage when it comes to opportunities that require reading and writing, potentially also having to interact with 122 different languages.

Further, having such a vast linguistic diversity presents barriers when it comes to accessing technologies that are predominantly in English. Less than 1% of Nepalese people speak English as their first language (*Ryan, 2022*). Instead, most Nepalese people speak Nepali at 44% of the total population (*Statistics, 2018*).

In efforts to improve technology access and usability for the population, it is recommended that Nepal tailor business training that is aligned with building specific technological skillsets. The purpose for this type of approach is to assist SME owners with learning approaches that allow them to see clear and direct benefits to organizational processes.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) is leading the charge to improve language literacy in the region. Since 2016, UNESCO has worked with the Government of Nepal through the Capacity Development of Education (CapED) Programme to provide literacy training through the regions 2,151 Community Learning Centers (CLCs) (*UNESCO, About UNESCO Office in Kathmandu, 2022*). CLCs are important to improving language literacy in Nepal, as they reach those who live in rural areas, mountains, as well as people who have poor access to formal education institutions. CLCs focus on topics and trainings that cover financial literacy, resource management, and how to use digital technology to develop literacy skills. Also, during the COVID-19 pandemic, CLCs were crucial to ensuring the continuation of education in Nepal by providing local children and adults with access to computers and the internet so they could participate in the online training programs that were offered by the CLCs during the pandemic. Organizations such as UNESCO, that are providing language literacy training, are key to removing technology access barriers and contributing to the language literacy growth mentioned earlier over the past two decades.

Digital Literacy In the past, universities actively sought out students for digital and entrepreneurial training, but now the students come to them. Local chambers of commerce assist in pairing investors

and mentors with those seeking to become SME owners, as well as help define different models for business incubation centers. The federal government gives these local chambers funding to do so. NGOs oftentimes provide most of the training support to remote districts, roughly 22 of them (52, 2021). We learned through interviews that the majority of those in-country organizing and attempting to standardize training, SME entrepreneurship and digital upskilling, do so as part-time volunteers. Many of these volunteers also own their own companies and/or have full-time jobs, so their bandwidth for these capacity-building activities is limited. Many interviewees do recognize the need for outreach and digital training for the Nepali workforce (52, 2021).

Volunteer groups like Antarpurana push government and academia stakeholders to provide entrepreneurial development, which includes some digital training. National campaigns such as #WorkinNepal aim to keep talent in-country by establishing business simulation programs, incubation centers in Chitwan and Birgunj and five colleges (52, 2021). Foreign non-profit organizations like PUM Netherlands assist in growing and training Nepal and other emerging countries' SME programs (52, 2021). The government of India gifted the government of Bhutan a Business Startup Center. Bhutan has since been working with Nepal to establish a national Nepali Startup Center, offering support programs such as mentoring, training, marketing, product designing and development, linkages to financial institutions and other business services (Government of Nepal Ministry of Economic Affairs, 2018).

Education regarding internet safety has yet to make its way to the SME level in Nepal. SME owners lack a general awareness of internet security, viewing security as neither a real threat nor concern. Online

disinformation and misinformation are present and persistent problems in Nepal. Most SME owners would benefit from awareness campaigns, even as simple as how to handle spam and email security, and how women can deal with online harassment. SME owners would also benefit from better understanding means and opportunities for digital banking, aside from small money transfers/deposits.

Despite an increasing role of digital technologies across all spheres, digital education is yet to find its place in Nepali education system. More than 90% of the schools in Nepal do not have digital connectivity or ICT devices. However, one interviewee told us that schools are teaching children core digital skills such as how to use the Microsoft Office Suite (57, 2022).

A separate interviewee recommended that digital (and financial) literacy modules be incorporated into all business skills education, as businesses miss out on profitability because they are not integrated into the digital world (59, 2022).

Challenges to Cultivating a Tech Forward Culture

In Nepal, as with the surrounding nations, the challenges associated with cultivating a tech forward culture is impacted greatly by the existing social structure, societal norms, and the disparities discussed above.

Education and Workforce Development

Education and Awareness There are no digitization or entrepreneurial skill development initiatives at the school level in Nepal. There is an overall lack of information regarding technology being passed to students and the general public. Like many countries, Nepal lacks national digital security awareness programs that would benefit Nepali of all ages.

An interviewee noted that, outside the formal education system, basic software training classes conducted by business associations, or other non-governmental groups, could help increase digital literacy for Nepalese (58, 2022). Interviewees mention that there are conversations being had at the national level, discussing how best to introduce such awareness and training programs to change the mindsets of people at the various school levels, who in turn will continue to teach their older family members.

Workforce Development and Training

The government of Nepal, as well as national business membership associations, worry about the “brain drain” of young and educated Nepali leaving to pursue education and work in foreign countries such as Korea, India, and Kuwait. In Nepal, start-ups are difficult to get off the ground and sustain, namely due to lack of funding. Young people and business owners leave Nepal due to lack of sustained business funding, proper mentorship, and education, as well as Nepal having little-to-no in-country manufacturing sector (54, 2021).

Business and digital mentoring and training needs to be a constant—frequent and sustained throughout the course of a SME’s life. SME operators and mentors we interviewed recognized that mentoring and financial assistance cannot be confined to initial infusions, then left without further guidance. Currently, the entrepreneurial system is only designed to initially help new start-ups, not sustain and grow businesses. An interviewee noted Nepali people need a “nudge” and an example of someone/another business who is doing well to model. Promoting a group of well-publicized “success stories” paired with a clear message extolling the tangible benefits

of digital skills may help reach those who need digital upskilling (57, 2022). Further, the government, non-profits, academia, and private entities must continue investing in digital skills training in schools, and newly formed and already established businesses. SME-focused entities should create business and financial mentoring opportunities for SMEs.

Finance Challenges for SMEs

Along with addressing digital education, training, and workforce development, Nepal needs to help foster an ecosystem to help establish and grow SMEs, allowing for five to seven years to see growth in their businesses. This kind of ecosystem does not exist, and newly formed SMEs are not seeing growth funds.

With the advent of fintech and e-commerce in Nepal, financial services are becoming more prevalent, especially mobile payment platforms. Those in rural areas continue to lack access and inclination toward using financial services in general. In 2016, it was reported that 60% of adults in Nepal do not have access to financial services (UNCDF, 2020). A large portion of the population does not use banks and, when they do, it is with the national bank, Nepal Rastra Bank, which often provides limited digital payment/processing options or availability of loans for first time business owners.

In addressing SMEs specifically, Nepal lacks an appropriate credit infrastructure to support SME growth, including credit guarantee mechanisms and insurance schemes. Insufficient venture capital financing and foreign direct investment (FDI), stringent collateral requirements and difficulty accessing larger volumes of credit are obstacles SMEs in Nepal experience.

One of the biggest problems faced by micro-enterprises is the lack of willingness of banks to provide small credits to small entrepreneurs despite government provisions. Instead, banks find ways to divert that money to bigger industries. There is an estimated funding gap of \$2.5 billion NPR for micro enterprises, \$580 million NPR for small enterprises, and \$471 million NPR for medium enterprises. Only 5% of commercial bank portfolios have invested in small to medium-sized businesses, and around 13% of monetary financial institutions have invested in medium enterprises. Due to the limited number of private banks in Nepal, most loans must be obtained through the central bank—Nepal Rastra Bank—which has not made providing SME owners loans a common business practice (*UNCDF, 2020*). The government also does not allow for SMEs to receive FDI, another financing stream of which SMEs cannot access. In general, Nepal's business environment is unable to drive growth, as evidenced by the low investment rates—FDI-to-GDP rate of 17.41% for Nepal compared to 33.16% average for selected neighbors in the South Asia region (*USAID, 2020 – 2025*).

Small and medium-sized firms are also shut out of bank credit due to high interest rates and collateral requirements. The Department of Industry is setting up a “Main Fund on Loan Flows to Micro, Cottage, and Small Industries” to channel funds from financial institutions to small enterprise business owners who receive required training. Small to medium-sized firms cannot legally access FDI (new laws allow for technology transfer); therefore, entrepreneurs often must crowdfund their start-ups. Small to medium enterprises are eligible for government subsidies on exports, but many find the application process unwieldy (*Dahal, July 2020*). Further, an interviewee noted the lack of speed in the current banking system remained an issue. On average, it takes 4 – 5 days to process payments in Nepal, which hurts efforts

by Nepali SMEs to establish trust with their foreign counterparts (*56, 2022*). A separate interviewee noted government restrictions leading to payment delays prevented Nepal businesses from competing freely in the global market (*58, 2022*).

Several financial tech companies are leading the charge in identifying how best to lobby the Nepali Government, as well as secure funding for existing and new SME ventures. In a country of over 30 million people, only 1.4 million people are exposed to formal lending of some sort. Eighty percent of those 1.4 million people who take advantage of formal lending do so for personal, not business, purposes. Therefore, only 20% of Nepal's formal lending apparatus is used for business purposes, and 95% of enterprises that use such formal lending are big corporations—not SMEs. The economy is controlled by a small number of large corporations and roughly 100 influential families.

Financial tech firm F1Soft recognizes the need for sustainable growth within Nepali SMEs and the current lack of funding/loans in circulation for such enterprises. F1Soft established a program with the Nepal Rastra Bank, which is to go live in February 2022, to establish loans for up to \$.5 million NPR per applicant for SME growth. F1Soft will provide the digital security and processing of such loans, with the goal of in 5 years, expanding their lending platform to reach .5 million businesses, providing \$2.5 billion NPR in loans. This F1Soft initiative will also target education and digital upscaling, to include programs that address financial literacy, inclusion, finance management, bookkeeping (newly created apps to assist in bookkeeping), online marketplaces and classes in how to manage investment. The Nepal Rastra Bank agreed to partner with F1Soft on this SME loan initiative because, in lieu of the SME owner providing collateral, F1Soft would monitor,

with regularity through its app, spending habits and the financial help of the SME applicant—using data to provide feedback to the Bank as to whether the loan should be sustained. Furthermore, the Nepal Rastra Bank has acknowledged that its digital lending platform is unsecure, a problem private industry can help fix (54, 2021).

Challenges with Business Functionality—Digital and Non-Digital

Difficulty Marketing Businesses Nepal lacks the digital ecosystem for businesses to thrive and expand beyond their place of business. Most SME owners struggle to make their own websites and/or market their goods via social media or other sites. Advertising internationally, exporting goods and handling payment models are nearly impossible for SME owners. SME owners, both male and female, need assistance identifying potential markets and buyers for their goods—particularly those in the carpets and textiles industry. SME owners seek to sell their items on Amazon and Alibaba, but this is not an option for Nepalese business owners. E-commerce in Nepal is predominantly used for importing products, predominantly from India and China. E-commerce is limited to domestic transactions. Cross-border trade is restricted due to lack of payment solutions. Regulations block Nepali exporters from accepting payment from credit cards or even PayPal (Dahal, July 2020). Nepal's Economic Forum conducted a survey in 2021, which indicated that over 45% of Nepali use social media; 50% of that percentage use Facebook. However, in Nepal, due to various policies, Nepali are unable to use Facebook Marketplace (57, 2022).

No In-Country Manufacturing and Poor Logistics

Nepal has very little-to-no in-country manufacturing ability; therefore, it relies on more expensive raw

materials from India, Sri Lanka, and China—driving up the costs of their final product. Nepal's geography of being landlocked is difficult for business logistics. During COVID-19, SME owners expressed that they had a difficult time receiving raw materials from outside Nepal. When there are international supply chain issues, SMEs acutely feel the pain, as they cannot produce their own raw materials; therefore, business is stalled. If there are transportation issues—roads are blocked or trains cannot function—once more, SMEs cannot receive goods from elsewhere. Likewise, they have difficulty bringing their goods to market. Enhanced digitization could most certainly help bring goods to market, but many SMEs are not aware of this (55, 2021). These concerns are more pronounced in rural areas. SME owners express concern that their goods are priced higher than neighboring countries' goods because they cannot bundle products with other producers, due to lack of manufacturing options.

Lack of Government Responsibility, Coordination, and Implementation of Written Policies and Frameworks

Nepal needs to make strides to automate parliament administration and to implement legislative support systems. Barriers to digitization include cybersecurity, IT expertise, digital authentication mechanisms, and funding (Kautish, June 2021). Interviewees of this project emphasized that there need to be more well-defined roles and responsibilities within the government as to which ministry/departments will

NEPAL LACKS THE DIGITAL ECOSYSTEM FOR BUSINESSES TO THRIVE AND EXPAND BEYOND THEIR PLACE OF BUSINESS.

implement identified portions of the Nepal Digital Framework 2019 and SME-focused legislation and assistance projects. The Ministry of Industry has developed policies for promoting innovation and startups, as well as SMEs; however, implementation has been very difficult (63, 2022).

Nepal Digital Framework 2019 needs to be better implemented. The government has started to implement it, but identification of partnerships between the government and industry has been very slow (52, 2021). The government's limited digitization and underdeveloped websites and processes can be confusing and inconsistent for SMEs attempting to make use of offered programs and assistance. While the Federal Parliament of Nepal has a webpage, parliamentarians do not regularly engage with digital information. The availability of parliamentary documentation and decisions electronically is wanting. The Federal Parliament of Nepal and its Secretariat rely on a manual filing system. There are no online forums for citizens to engage with government.

The process of formally establishing a SME is cumbersome and bureaucratic. This is one of the main reasons SME owners do not formally register their businesses (54, 2021). SME owners need clearer guidance from the government as to how to clear cumbersome policy hurdles, as well as fill-out and renew paperwork. When the government has tried to implement pro-SME functions, particularly those of a digital nature, they often have difficulties doing so. For example, the Ministry of Industry has worked to develop an ecommerce site; however, they have run into many problems developing the site msme.nepal.com; or, despite the fact that money has been allocated to the MEDPA program for dispersal to impoverished SME owners, the organization has difficulty communicating with SME recipients and

dispensing the money. If the government could streamline the process (digitize the process and house it in a single ministry), create better awareness of the process and promote the benefits of being a formally registered business, SMEs would take better advantage of the pro-SME policies in existence (MOICS, 2022).

CONCLUSIONS

Nepal's relatively newly formed federal government continues to feel its way through how best to organize its ministries, as well how best to establish roles and responsibilities within and outside of those ministries. In so doing, roles and responsibilities for industry, to include SMEs, are spread amongst several ministries, organizations, and frameworks, with less than desired interoperability and communication. The Nepali government will find it easier to implement many of the already-existing digital and SME-related policies it has if it can focus its SME governing functions within one ministry and streamline (and digitize) bureaucratic registration and SME lifecycle processes. The more Nepal can empower and support its local governments and private industry to push for digital upskilling and SME training and support, the better Nepal will be able to achieve its economic and Nepal Digital Framework 2019 goals.

Nepal's education system, to include universities and continuing education programs for adults, are making strides to emphasize the benefits of digitization. Nepal would benefit from nation-wide cyber awareness programs, as well as SME-focused cyber awareness programs. Business and digital mentoring and training needs to be a constant—frequent and sustained throughout the course of a SME's life. Private industry, particularly advanced Nepali fintech companies, and SME business membership groups working in

conjunction with business incubators, academia and third-party international organizations could help boost Nepal's digital advancements. In Nepal, infrastructure, particularly lack of internet, does not pose a major hindrance to digitization; rather, it is the lack of training and awareness of SME owners, particularly rural ones.

A common theme throughout the interviews was that no amount of policy or regulation can help get a SME off the ground. Nepali SMEs find it difficult to establish and sustain their businesses without the proper funding to which SMEs in other countries have access—loans without significant collateral and FDI. Private industry working alongside the National Rastra Bank has identified new opportunities for SME owners

to establish loans. Nepal would benefit from widening its aperture for financial support for SMEs, to include more private banks in Nepal and foreign investors.

Overall, roughly 6 out of 10 people in Nepal have adopted digital technology with an impressive 6% adoption growth rate. In a post-COVID-19 period, SME owners will continue to be exposed to digital means and best practices for upskilling their businesses. As the government can find ways to organize and fund the implementation of its digital goals at the local and provincial levels, its programs will take hold and start resembling those of nearby countries such as Sri Lanka, Bangladesh, and India.

RECOMMENDATIONS

TABLE 4. RECOMMENDATIONS – NEPAL

#	Challenge Area	Recommendations for State/USAID	Recommendations for Nepalese Government
1	Education	Encourage and facilitate Nepali industries and government to tailor business training that is aligned with specific technological skill sets.	Nepal industries and government should tailor business training that is aligned with building specific technological skill sets. Identify how best to assist SMEs with training on how to best digitally market products. Provide opportunities for SME owners to learn how to better digitally market their goods and businesses.
2	Education/ Outreach	Work with non-governmental organizations such as Federation of Nepalese Cottage and Small Industries and Antarpurana to establish effective educational outreach, mentoring, and workforce development programs, including those on digitization topics.	Continue working with organizations such as UNESCO and its community learning centers that provide language literacy training, which is key to removing technology access barriers and contributing to the digital literacy growth.
3	Education/ Awareness	Assist Nepal's government in implementing national and SME-specific cyber awareness programs as part of a national digital literacy curriculum. Engage NPCERT to do so.	Implement national and SME-specific cyber awareness programs as part of a digital literacy effort that target topics such as digital security, mis- and disinformation, simple cyber hygiene (password protection, phishing, etc.). Government could assist in financing SMEs for the adoption of strong cyber practices, to include website audits.

TABLE 4. RECOMMENDATIONS – NEPAL *(Continued)*

4	Education/ Outreach	Assist Nepal in establishing provincial data centers and centers for implementation of Digital Nepal programs.	Better fund and enable local governments to provide tech assistance and microenterprise development via programs like MEDPA.
5	Outreach/ Finance	Provide outreach to government regarding Nepali access to FDI and more domestic and international private banks.	The government also should allow for more venture capital to enter Nepal in the form of FDI. Government institutions can explore changing regulations and licensing processes. Expand number of private banks in country.
6	Awareness/ Finance	Assist in stakeholder engagement training to better connect private and public industry.	Engage private industry regarding necessary reforms. Private industry can also continue serving as the means for mentoring SME startups and providing incentives, as in the case of F1Soft. To jumpstart lagging industries, government could provide small credits/cash incentives to SMEs and work with public and private banks to ease loan and collateral requirements and penalties for not meeting requirements.
7	Governance	Facilitate access to U.S. Customs and Border Protection for revamping of Nepali exportation/importation processes, encouraging government migration from paper-based systems to online systems and processes.	Move federal government from paper-based systems to digital transactions and create more e-commerce options. Help Ministry of Industries develop their website: msme.nepal.com . Streamline and digitize Customs and Border Protection process for exportation/importation of goods.
8	Governance/ Awareness	Work with government and non-governmental organizations (i.e., chambers of commerce and business associations) to promote and facilitate information-sharing and awareness, including cybersecurity best practices as well as technologies and applications SMEs could incorporate into their businesses. Share best practices on inter-governmental information sharing, as well as relevant case studies/success stories from other countries—regional and elsewhere.	Identify one government agency to take primacy of and streamline other agencies' SME efforts. Identify a formal/informal mechanism for sharing national level MSME information-i.e.-Develop a shared national-level SME database. This database would be used/referenced by all government organizations, and perhaps non-government organizations, involved with SMEs
9	Governance/ Awareness	Assist in developing and/or reviewing legal frameworks and regulations.	Increase the digital security of Nepal SMEs and their ability to defend against threats through formalized legal frameworks and regulations for data protection, such as finalizing the draft National Cyber Security Policy 2021.

TABLE 4. RECOMMENDATIONS – NEPAL *(Continued)*

10	Governance/ Awareness	Advise on solutions to government data constraints that hamper ability to streamline SME digitization processes. Address topics such as government-wide data storage and recordkeeping, as well as establishing agency-specific databases that allow for the sharing of information with other national agencies.	The government should streamline and digitize mechanisms by which SMEs apply for and receive monetary assistance and business approvals—loans, grants, MEDPA assistance, taxes, etc. Condense processes under one Ministry's responsibility. Align policies for SMEs—taxes, payments, registration, digital invoices, etc. Address data constraints—improve the enterprise recordkeeping systems within various government departments. Make SME owners/managers aware of available tax exemptions, concessions, and other incentives to promote formalization of businesses.
11	Business/ Awareness	Attend and/or co-host national industry/economic/digitization expos and seminars in Kathmandu, raising awareness for and providing expertise to encourage adoption of digital tools by Nepal SMEs.	Promote national expos and seminars in Kathmandu.
12	Access	Assist in development of a more robust network of fiberoptic cables and 4G to expand access to high-speed internet for SMEs currently lacking broadband connectivity.	Invest public funds and attract private funding to the development of a more robust network of fiberoptic cables and 4G to expand access to high-speed internet for SMEs currently lacking broadband connectivity.
13	Access/ Awareness	Assist in providing further cyber capacity building opportunities beyond educational and governance efforts, to include technical assistance—tools and platforms—that might help Nepal reach SMEs more directly. An information sharing platform for Nepal SME owners to share evaluations of digital business tools (i.e., accounting software or digital marketing platforms) and/or commercial online services (i.e., website creation services) may be helpful.	Develop secure platforms targeted at SMEs and their customers that could be customized and deployed quickly by the government and SMEs



SRI LANKA

COUNTRY CONTEXT

Sri Lanka is classified as a “lower-middle-income” country by the World Bank in the South Asia region, with a gross national income of between \$1,046 and \$4,095 (*World Bank, 2021*).

Following an extended civil war fought from 1983 to 2009, Sri Lanka’s economy continues to evolve, moving from primarily agricultural goods to manufacturing, trade, financial services, and real estate. In 2020, Sri Lanka’s Gross Domestic Product (GDP) stood at \$80.7 billion USD with per capita GDP averaging \$3,682 USD. Sri Lanka has made significant progress on socio-economic and human development fronts, and their high rank among their regional peers for these indicators reflects that progress (*International Trade Administration, 2021*). In Sri Lanka, the term

“SME” refers to micro, small and medium enterprises (MSMEs) (*Ministry of Industry and Commerce, 2015*). Sri Lankan data sources, including government statistics, often include micro enterprises in their “SME” data. Despite micro enterprises being beyond the scope of this paper, we opted to use the acronym MSME when referring to the Sri Lankan “SME” sector, for clarity and data consistency.

MSMEs are a key driver of Sri Lanka’s socio-economic growth, and they are attempting to increase their use of digital tools as they continue to grow. The government of Sri Lanka (GoSL)—along with chambers of commerce, business associations, and external aid organizations—support this effort by providing resources, programs, and incentives for adopting digital tools. Unfortunately, this support is often uncoordinated and not sustained, which limits the effectiveness of well-intentioned efforts and leaves many MSMEs feeling deserted in their efforts to digitize and grow.

Though Sri Lanka continues to progress, digital literacy, cyber awareness, and governance issues remain barriers to further digitization and growth of Sri Lankan MSMEs. The following section examines these barriers and provides recommendations on how future interventions could help increase digital adoption by MSMEs.

OBSERVATIONS

MSMEs Definitions and Distribution in Sri Lanka

MSMEs make up a large part of Sri Lanka's economy, employing over 3 million people, and accounting for approximately 75% of all businesses. Of note, a

2014 economic census revealed “micro” enterprises comprised over 90% of the Sri Lankan MSME sector (*Sri Lanka Department of Census and Statistics, 2015*). MSMEs are represented in all sectors of Sri Lanka's economy and reflect approximately 45% of total employment in Sri Lanka, accounting for 52% of Sri Lanka's GDP. About 40% of MSMEs nationwide work in the processed foods sector, and Sri Lanka's Export Development Board (EDB) has estimated this sector alone employs more than 2 million people. Other key industries for MSMEs include agriculture, tourism, apparel, and handloom/handicraft items (*Government of Sri Lanka*). Table 5 below illustrates Sri Lanka's delineation of MSMEs, as defined by the National Policy Framework for Small Medium Enterprise Development:

TABLE 5. DEFINITION OF SRI LANKAN MSMEs (*Sri Lanka Ministry of Industry and Commerce, 2015*)

Sector	Criteria	Micro	Small	Medium
Manufacturing	Number of Employees	10 or Less	11 – 50	51 – 300
	Annual Turnover	> 15M LKR (> \$7.5k USD)	16 – 250M LKR (\$80k – \$1.2M USD)	251 – 750M LKR (\$1.2 – \$3.7M USD)
Service	Number of Employees	10 or Less	11 – 50	51 – 200
	Annual Turnover	> 15M LKR (> \$75k USD)	16 – 250M LKR (\$80k – \$1.2M USD)	251 – 750 million LKR (\$1.2 – \$3.7M USD)

LKR: Sri Lankan Rupees

Digital Adoption

As of 2020, Sri Lanka achieved access to mobile-cellular networks for more than 99% of its population, including 4G/LTE mobile network coverage for 96% (*International Telecommunications Union, 2020*). Mobile cellular possession stood at 144 per 100 inhabitants, while active mobile-broadband subscriptions were 73 per 100 inhabitants. Fixed-line broadband subscriptions stood at 7.81 per 100 inhabitants (*International Telecommunications Union, 2020*).

Mobile internet connectivity in Sri Lanka is affordable, although gender-based and urban-rural digital divides persist. In a 2019 survey, 25% of respondents said cost of data was a limiting factor in internet use. The average monthly price for fixed-line broadband was 1,872 LKR (\$9.58 USD). For comparison, mean household income in Sri Lanka was 62,237 LKR (\$341 USD). Prices for mobile broadband vary, and Sri Lanka has the 7th most inexpensive data-only mobile broadband plans in the world (*cable.co.uk, 2021*). According to the International Telecommunication Union (ITU), the cost of high-consumption mobile-data and voice packages amounted to less than 1% of the country's gross national income (GNI).

At the start of 2022, there were 8.2 million social media users in Sri Lanka, including 7.1 million users of Facebook. While 8.2 million users are approximately equal to 38% of the population, the number of individual social media users may not necessarily correspond to unique individuals, given the nature of social media accounts (*DataReportal, n.d.*).

Despite the breadth of mobile phone and internet usage, the GoSL reports modest numbers for computer and digital literacy, according to a 2020 government survey. The survey defined computer

literacy as “able to use a computer on his/her own” and digital literacy as “able to use a computer, laptop/tablet, or smartphone on his/her own”, and sampled Sri Lankans aged 5 – 69. Of note, the gap between the national digital literacy rate and national computer literacy rate has widened in recent years (50.1% vs 32.3% in 2020), which may illustrate the population's increasing shift towards digital devices other than a personal computer such as cell phones and tablets (*Sri Lanka Department of Census and Statistics, 2020*).

MSME usage of ICT and adoption of digital tools that could be beneficial to their growth (and that of the Sri Lankan economy) seems to correspond to other country-wide indicators for ICT and digitization, despite significant government, industry/chamber of commerce, and foreign assistance efforts. A 2019 survey noted that only 40% of surveyed MSMEs used the internet or social media for their business. Of those that did not make use of these technologies, MSMEs most often answered, “No need” (79%) when questioned why. Similarly, only 4% of surveyed MSMEs reported using “mobile money” (i.e., digital payments), with 60% of MSMEs also answering, “No need” when asked why (*LIRNEAsia, 2020*). MSMEs have many reasons for not using digital technologies to support their businesses; however, we saw a common theme in interviews with multiple MSME owner/operators and MSME-related stakeholders: Many MSME owners/operators do not have knowledge, nor awareness, of how to use technology to benefit their business, and therefore do not believe they need to incorporate technology into their business. A 2021 study showed similar numbers—only 49% of surveyed MSMEs reported that they had ever used digital tools for business purposes prior to the COVID-19 pandemic, with a modest increase noted during the pandemic, likely out of necessity (*DAI, 2021*).

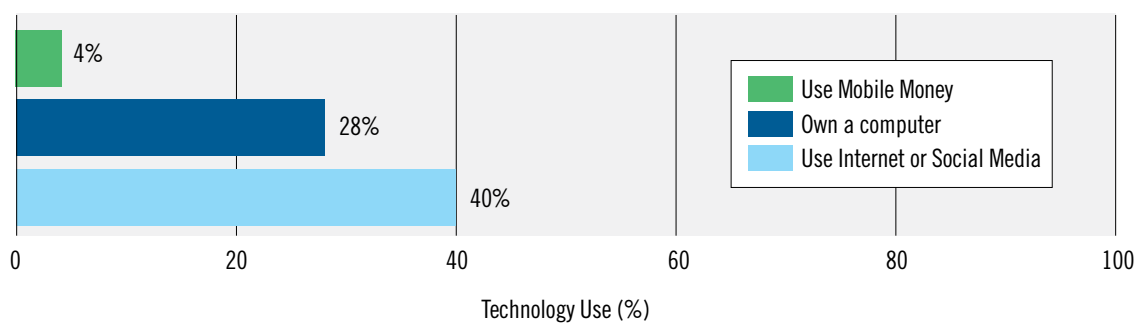


FIGURE 8. SRI LANKAN MSME TECHNOLOGY USE (2019) (LIRNEAsia, 2020)

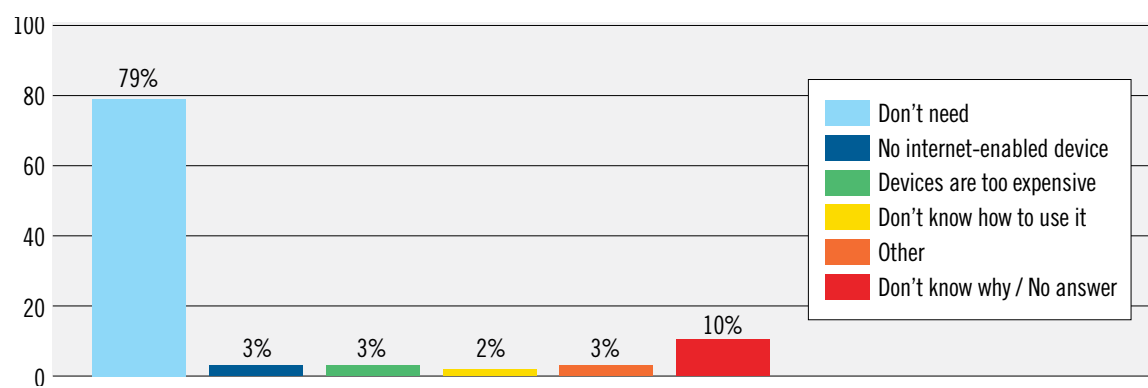


FIGURE 9. MSME REASONS FOR NON-USE OF INTERNET/SOCIAL MEDIA (2019) (LIRNEAsia, 2020)

Digital Security

MSMEs who adopt digital technologies are vulnerable to cyberattacks, and Sri Lankan information security experts noted that more than 90% of cyberattacks take place due to “poor IT hygiene” (CISO.in, 2022). IT (or cyber) hygiene is a term commonly used to refer to “cyber best practices and other activities... users can undertake to improve their cybersecurity while engaging in common online activities, such as web browsing, emailing, texting, etc.” (CyberSecurity Forum, n.d.). Further, Sri Lankan cybersecurity Advisor Asela Aidyalankara noted MSMEs are at significant

risk to cyberattacks, particularly because they do not have the resources to consistently patch and update their software and equipment (The Island Online, 2021). A 2020 study noted Sri Lankans encountered ransomware and malware at double the global average (LKI, 2020) with a contributing factor likely that many Sri Lankan-based ICT assets were vulnerable due to the aforementioned “poor IT hygiene”. Though government officials and cybersecurity experts recognize these risks, Sri Lankan MSMEs interviewed are largely unaware of the dangers. No MSME interviewees discussed any specific measures they

take to protect themselves from cyberattacks, nor did they express any concern about digital security or how a cyberattack might affect their business. The relative recency of online activity for MSMEs, as well as the lack of perceived consequences likely contribute to this lack of concern—no MSME interviewed reported being the victim of any kind of cyberattack.

Given the present (and growing) cyber threat to MSMEs, particularly as more MSMEs adopt digital tools and make use of online services, it may be beneficial for organizations to engage with the Sri Lankan Computer Emergency Readiness Team (SLCERT), a government team of cyber professionals who can help assess and manage cybersecurity related threats and emergencies. SLCERT may be able to provide basic cybersecurity awareness training as part of the digital literacy offerings for MSMEs (discussed in subsequent sections below).

Public Policy and Relevant National Legislation

Selected Government Institutions: While the Ministry of Industry and Commerce appears to play the most significant role within the GoSL for government role MSME-related issues, in totality, there are more than 15 departments/authorities that have a responsibility, mandate, or authority related to specifically to MSMEs. Moreover, there are over 20 ministries with more than 90 subordinate departments, authorities, or councils that have a responsibility, mandate, or authority related to business interests, many of which may also touch on MSME-related issues (*Ernst and Young; FJ&G De Saram, 2019*). The following section discusses selected government institutions with MSME responsibilities:

- **National Enterprise Development Authority (NEDA).** An entity under the Ministry of Industry and Commerce, NEDA was established in 2006

to encourage, facilitate, and develop micro, small and medium enterprises in Sri Lanka. NEDA offers programs to MSMEs, including those in techno entrepreneurship, enterprise forums (district, regional, and national), market linkage, and regional entrepreneurship development, among others (*Ministry of Industries, 2022*).

- **Industrial Development Board (IDB).** A statutory body under the Ministry of Industry and Commerce, IDB is the state organization responsible for developing industry in Sri Lanka. IDB offers a range of services to Sri Lankan businesses, including engineering services, marketing assistance, entrepreneurship development, and technology assistance. IDB also offers several ICT-focused workshops and seminars for MSMEs, including Fundamentals of ICT, Digital Marketing for SMEs, IT Applications for SMEs, MS Office, and Mobile Applications and Technology (*Industrial Development Board/Ministry of Industries, 2022*).
- **Information and Communication Technology Authority (ICTA).** An entity under the Ministry of Technology (formerly under the Ministry of Digital Infrastructure and Information Technology), ICTA is the lead ICT agency for Sri Lanka, and is responsible for implementing all ICT projects initiated by the government. ICTA leads the GoSL's digital transformation efforts and has developed and implemented multiple programs targeting MSMEs. Among other initiatives, ICTA administers the “Sri Lanka Go Digital” program, a digital adoption program for the MSME sector and the “LEAP IT SME Export Readiness Program”. ICTA also manages the “Educate to Innovate” capacity-building program and is leading an initiative to establish five regional clusters for technology education and diffusion (*ICTA, n.d.*).

- **Export Development Board (EDB).** An entity under the Ministry of Industry and Commerce, EDB's goal is to support Sri Lankan industries to expand their business internationally. EDB offers consultative services to MSMEs located throughout Sri Lanka and sponsors educational seminars and training programs designed for new exporters, among other services. EDB also sponsors programs to assist MSMEs in business registration, accessing business services, awareness building, and business matchmaking (*Export Development Board Sri Lanka, 2022*).
- **Small Enterprises Development Division (SED).** Under the Ministry of Youth and Sport, SED offers entrepreneurship, business consultancy, and technical training services to educate prospective MSME owners, focusing on young entrepreneurs. Current SED training programs include—but are not limited to—those on entrepreneurship, management skills development, innovation and technology development, financial management and literacy, and marketing (*Small Enterprises Development Division, n.d.*).

Relevant Government Policies and Programs. Sri Lanka has numerous pieces of policy and government-sponsored programs that pertain to MSMEs and digitization. The following section discusses a selected group of legislation and programs:

- **National Enterprise Development Authority (NEDA) Act 2006.** Among other things, this act established NEDA to “promote, support, encourage, and facilitate enterprise development within Sri Lanka,” with special emphasis [on] MSMEs” (*Parliament of the Democratic Socialist Republic of Sri Lanka, 2006*).
- **Sri Lanka National Policy Framework for MSME Development (2015) and Action Plan (2016).**

The goal of this framework is to stimulate growth of MSMEs to “produce world class products and services that can compete locally and internationally” by focusing on six strategic areas: 1) Enabling Environment; 2) Access to Technology; 3) Entrepreneurial Culture and Skills Development; 4) Access to Finance; 5) Market Facilitation; and 6) Research and Development (*Ministry of Industry and Commerce, 2015*). The action plan envisioned an MSME Advisory Council, Inter-Ministerial Coordinating Body and an MSME Authority responsible for policy implementation. Further, an MSME cluster committee, Policy Monitoring and Evaluation Committee, and other stakeholders would be included in the implementation process (*Ministry of Industry and Commerce, 2016*).

- **National Digital Policy 2020 – 2025 (2019).** This policy outlines Sri Lanka's digital agenda for 2020 to 2025. The policy provides the high-level principles and conceptual framework for Sri Lanka to achieve sustained economic development and growth, through the creation of an “Innovative economy and an effective governance model” (*Ministry of Digital Infrastructure and Information Technology, 2019*).
- **“Sri Lanka Go Digital” Program.** This program focuses on digital transformation and technology adoption, and is administered by ICTA, with the goal of helping MSMEs embrace digital technologies to uplift their business (*ICTA, n.d.*).
- **LEAP Sri Lanka.** LEAP is an export readiness program for regional technology MSMEs, initiated by ICTA and supported by EDB since 2019. The focus of the program is on helping IT sector MSMEs with business development, business plans, international market access, etc. through workshops and “accelerator sessions” (*ICTA, n.d.*).

Other Relevant Organizations. In Sri Lanka, national- and district-level chambers of commerce have a significant role in the business landscape, and several of these organizations have departments and/or programs dedicated to MSMEs. Several chambers of commerce offer business consultancy, business registration, website development, e-commerce, social media, tax consultancy, export guidance, and other services to their members. Further, these chambers host workshops, forums, and roundtables to address MSME-specific needs. Similarly, national- and local-level business associations offer services to MSME members, including those focused on online/digital tool use, financial literacy, and business strategies. In Sri Lanka, there are business associations for all major industries, with some industries having multiple business associations, such as tea, rubber, finance, tourism, spices, processed foods, IT services, software, agriculture, ceramics, and others (*Ceylon Chamber of Commerce, n.d.*). Other volunteer-based organizations, such as Confederation of Micro, Small, and Medium Industries (COSMI) advocate for and assist MSMEs. COSMI was formed by chamber of commerce and industry association leaders to “revive, foster and promote industrial MSMEs” (*COSMI, n.d.*).

IMPACTS OF THE COVID-19 PANDEMIC ON MSMEs

Sri Lanka’s MSME sector faced significant challenges during the COVID-19 pandemic. According to a 2021 study, two-thirds of MSMEs experienced a decrease in demand for their products or services, difficulty meeting operating expenses, and increased employee turnover (*DAI, 2021*). 95% of MSMEs surveyed in a separate February 2021 study reported moderate to very high revenue risk. Further, 38%, 58%, and

25% of micro, small, and medium-sized enterprises, respectively, reported a risk of business closure within 6 months in the period April – June 2020 (*UNICEF, 2021*). MSMEs were confronted with breakdowns of their supply chain, working capital issues, price escalation, and difficulty interfacing with customers via traditional methods (*Gunawardana, 2020*).

Despite these widely reported hardships, interviewees from all stakeholder groups (government, chambers of commerce, MSME owner/operators) report a silver lining to the pandemic: MSMEs accelerating their digitization and digital tool adoption efforts, out of necessity. MSME owners report that they looked at all available options to keep their business open during the pandemic, as in-person customer interactions were not feasible (*64, 2021*) (*65, 2021*) (*66, 2021*). This search ultimately led them to online marketplaces and other digital options. Buoyed by their initial success in leveraging services such as WhatsApp and Facebook Marketplace to sustain their business, these MSMEs noted they likely would not return to the “old way” of doing business and intend to continue investing in digital marketing and e-commerce activities. Chamber of commerce representatives similarly noted an uptick in interest from their members regarding digital marketing workshops and introductions to online selling and e-commerce (*67, 2021*) (*70, 2021*).

CHALLENGES TO DIGITIZATION

Socio-Demographic Disparities

Age and Digital Literacy. While there are not widely available data on the average age of MSME owners in Sri Lanka, a 2008 study concluded that the MSME owners in Sri Lanka averaged 43.8 years of age (*de*

Mel, McKenzie, & Woodruff, 2008). A separate 2021 survey of more than 1,000 MSME owners found over 77% were 35 years of age or older, with 48.4% 45 years of age or older (*DAI, 2021*). In conversations with government officials and chambers of commerce, all parties noted that MSME owners over 40 years of age appeared to be the least likely to adopt digital technologies, with these owners often arguing that use of such technologies were not needed for their business to succeed (*66, 2021*) (*67, 2021*) (*68, 2021*) (*70, 2021*). In one interview, the college-aged child of MSME owners noted his parents had only agreed to try out (and ultimately) adopt digital tools only after he took the initiative to research the tools and articulate how they worked and what benefit they might bring to the business. This individual noted his parents had confessed to him that, while they were glad they had started to use Facebook for their business, they only did so because of his urging and interest, and would never have not done so on their own (*81, 2022*). Other interviewees reported a young MSME employee with an interest in web development and digital marketing offered to help set up a company's website and investigate other opportunities to pursue digital marketing, to which the MSME owner ultimately agreed (*80, 2022*) (*78, 2022*). While the COVID-19 pandemic did spark a few MSME owners to seek out digital tools in the interest of business survival, a larger issue appears to be a lack of digital literacy (and corresponding lack of digital tool adoption) among older age groups, illustrated by Sri Lankan government computer and digital literacy statistics. As can be seen in Table 6 below, computer and digital literacy rates drop below the country average starting in the age group 40 – 49, with individuals aged 60 – 69 predictably having the lowest rates for computer and digital literacy.

TABLE 6. COMPUTER AND DIGITAL LITERACY BY AGE GROUP (2020) (*Sri Lanka Department of Census and Statistics, 2020*)

Age Group	Computer Literacy Rate (%)	Digital Literacy Rate (%)
5 – 9	14.3	30.9
10 – 14	44.8	60.1
15 – 19	67.9	82.3
20 – 24	63.8	84.5
25 – 29	52.9	77.4
30 – 34	42.0	68.8
35 – 39	31.3	58.7
40 – 49	22.5	44.9
50 – 59	13.7	26.6
60 – 99	6.7	13.2

Gender and Digital Literacy. In 2020, computer literacy among women was 30.7% (34.1% for men), and digital literacy stood at 46.9% (53.7% for men) (*Sri Lanka Department of Census and Statistics, 2020*).

Despite the positive indicators of this relatively small gap, other statistics indicate there is still work to be done to bridge the gender gap for digital literacy. A 2019 study noted that women had a lower rate of mobile phone ownership (72% vs 86% for men), internet use (34% vs 45% for men), and social media use (21% vs 39%) than men (*LIRNEAsia, 2019*).

Further, women's labor force participation trails men significantly (40% vs 73% for men), and women ownership of formal MSMEs remains low. The Sri Lankan government has identified four basic challenges to women entrepreneurship—1) limited access to finance, 2) low level of business skills, 3) inadequate policy and regulatory

framework for women entrepreneurs and 4) a lack of data on women entrepreneurs to guide future programs—and has made efforts to address them (*EDB, n.d.*).

These (and other women-focused) programs appear to be at least moderately successful—Sri Lanka’s digital literacy gap by gender appears much smaller than other South Asian countries. However, additional work is needed to achieve digital literacy equity between the genders to further empower women MSME owners.

Language Literacy and Digital Literacy. Though the literacy rate in Sri Lanka is reported as over 90%, this literacy metric captures literacy among the population for their chosen primary language (i.e., Sinhala, Tamil,

or English). In practical terms, language fluency among Sri Lankans varies widely between the three main languages in use—Sinhala, Tamil, and English. Among the general population, approximately 87% are fluent in Sinhala (Sri Lanka’s official language), 28.5% are fluent in Tamil, and 23.8% are fluent in English (*CIA, n.d.*).

Given that most software and websites are English language-based, it is unsurprising that the computer literacy rate for Sri Lankans is directly proportional to their English language literacy. Figure 11 shows that 74% of English-literate Sri Lankans are also computer literate, a rate approximately double that of both Tamil- and Sinhala-literate Sri Lankans.

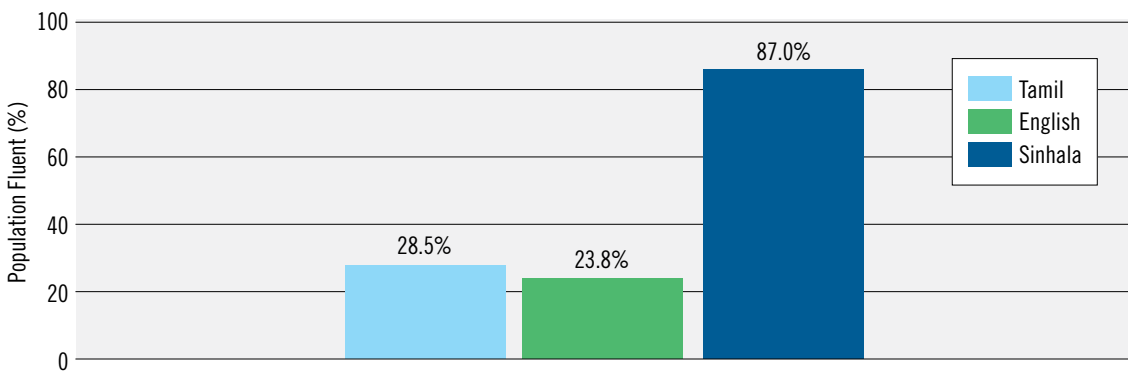


FIGURE 10. LANGUAGE PROFICIENCY IN SRI LANKA (*CIA, n.d.*)

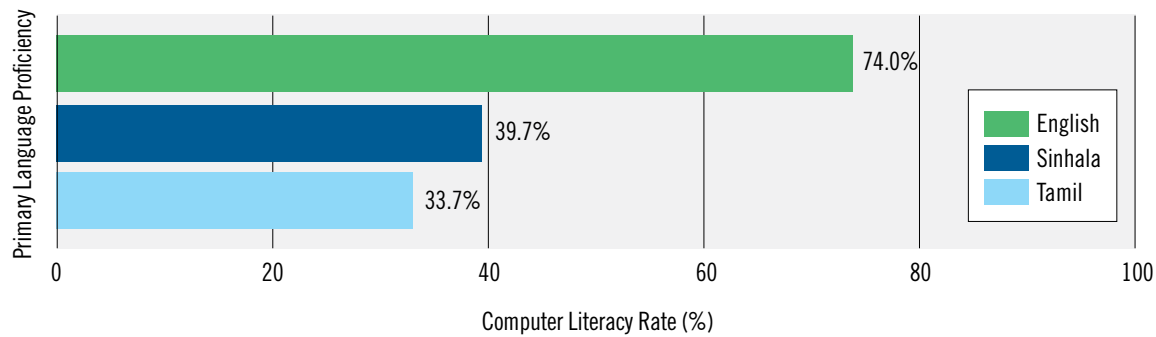


FIGURE 11. COMPUTER LITERACY AS A FUNCTION OF LANGUAGE LITERACY

(Sri Lanka Department of Census and Statistics, 2020)

Interviewees, including government officials, chambers of commerce representatives, and individual MSME owners, mentioned language literacy as a significant barrier to MSME digitization (65, 2021) (66, 2021) (81, 2022) (67, 2021) (70, 2021). A Sri Lankan banking official noted that several MSME owners and operators he encountered expressed frustration with the lack of Sinhala-language materials available for digital activities and tools, including accounting/bookkeeping software and online banking. He noted that language was a significant barrier, as it was an additional obstacle to MSME owners learning basic financial/digital literacy. MSME owners felt impeded from making investments in technology because it requires them to also make additional investments in language skills. The official posited that if Sri Lanka focused more on supporting digital processes in “native Sri Lankan languages” (i.e., Sinhala and Tamil), MSME owners would have significantly greater access to learn about the plethora of digital and online tools available to them (and their associated benefits), and would gain confidence in using them for their business (42, 2021). A separate government official noted that language is an ever-present barrier to their efforts

in engaging MSMEs on the use of digital tools, as almost all existing “off the shelf” materials for online e-commerce/digital marketing tools were written in English. As such, it is a very time- and labor-intensive task to translate user’s guides/manuals into Sinhala and Tamil, which limits the resources available to hold workshops (66, 2021).

People with low literacy skills and/or those without English-language literacy often have a difficult time acquiring digital skills and adopting digital tools, as many of these tools (and associated training materials) are found only in English. Thus, many MSMEs lack digitally literate workers, which presents a significant obstacle to the adoption of digital business solutions.

As of 2018, the GoSL began implementing numerous programs to address digital literacy issues. Such programs include literacy enhancement initiatives for students, teachers, and senior citizens. (*Technology, 2018*). In 2020, the GoSL launched efforts to establish district-level “one stop service centers” for MSMEs to address business registration, technology, access finance, and other needs, though we are unable to confirm if those efforts are ongoing (*Lanka Information,*

2020). Finally, we see ICTA's Regional Cluster concept, which seeks to partner with universities and facilitate digital literacy, education, and technology diffusion—as a sound concept by which to expand upon. (*ICTA, n.d.*). Interviewees viewed assistance at the local (i.e., district) level as the most accessible and effective, and they stated they would be most likely to participate in local or district-level assistance efforts, particularly when compared to national-level efforts (80, 2022) (72, 2021).

Challenges with Awareness

Lack of Awareness of Digital Tools for Business

The interview process revealed that MSME owners/operators suffer from a lack of awareness of how digital tools might be beneficial to their business, which hinders adoption of such tools. Chamber of commerce and business association representatives independently noted that a significant portion of their MSME members are not aware that Facebook, WhatsApp, or Google could be used for business purposes, though they use such services in their personal lives. These representatives noted that “almost all” of these same businesses have stable internet connectivity and own laptops or smartphones but are unaware that the tools they use in their daily lives to communicate can also be used to benefit their business. One government development official described some early discussions he had with MSME members regarding the use of Facebook's Paid Promotions/Marketplace or Google's “My Business Place” as “eye openers” for them; they were unaware that these tools even existed (66, 2021) (67, 2021) (70, 2021) (71, 2021).

A separate chamber of commerce representative noted that while some of their member MSME owners understood that creating a website or using Facebook might increase their sales, they had no real idea how

they could leverage those tools to do so, nor where to go for assistance. In one case, a MSME owner expressed that he had “heard that he could get more business from online” but had no knowledge or awareness beyond that general statement (70, 2021). Multiple MSME owners noted that they had arrived at digital tools for their business “by accident”, either through suggestions from an employee or young family member, or as a survival tactic when searching for ways to sustain their business during the COVID-19 pandemic. (78, 2022). Some noted that they had helped other MSME owners who were friends/acquaintances by passing on reviews/lessons learned of tools they had tried. These interviewees noted that peer reviews of digital tools often resonated with other MSME owners, but this informal mechanism was not sufficient by itself. Interviewees noted a coordinated (and incentivized) effort to encourage and facilitate a collaborative learning model between MSMEs at a local level would be very beneficial to all involved, and that MSME “authority figures” (i.e., government, chambers of commerce, and business associations) were ideal conduits for this effort. Interviewees also thought outreach by these MSME “authority figures” to promote an atmosphere of collaboration (vice competition) among MSMEs would also be helpful (80, 2022) (74, 2021) (75, 2021).

As discussed above, while many MSME workers have the technology to use cell phones or computers to navigate the internet, most do not use these resources for business purposes. MSME owners who have adopted digital tools in their business noted a widespread lack of awareness among MSMEs—in both their geographic locality and within their industry—regarding technology that could be used to benefit their business (71, 2021) (74, 2021) (75, 2021) (80, 2022). Many MSMEs likely cannot bridge this digital gap due to this lack of awareness.

Lack of Awareness Regarding Digitization Programs for MSMEs

As referenced above, while multiple government and non-governmental organizations offer digitization and business-focused trainings and workshops for MSMEs, only a small number of MSMEs interviewed were aware of these programs, and an even smaller subset had participated. The large majority of MSME owners responded in the negative when asked if there were any government-administered programs available to help MSMEs learn about digital tools. While the MSME owners interviewed did not doubt the existence of such programs, they had not heard of any specific workshops available to them, and invariably believed the government was focused on “large” enterprises in terms of development and digitization. Similarly, though many chambers of commerce and business associations advertise training/workshops targeted at MSMEs, MSMEs interviewed reported that they were unaware of any offerings that pertained to them, and in general thought the chambers of commerce and business associations focused on larger enterprises, vice MSMEs (76, 2021) (75, 2021) (79, 2022) (81, 2022). Thus, while a variety of resources for MSMEs do exist, they are not reaching their target recipients. MSME support offerings need to be consistent and widely broadcast, and efforts should be expanded to connect MSMEs to available resources.

Challenges with Access

Access to reliable internet remains an issue in rural areas of Sri Lanka, particularly outside Western Province. Multiple interviewees addressed the issue of internet connectivity in rural provinces (81, 2022) (76, 2021). One chamber of commerce representative recalled a virtual workshop where a group from Northern Province attempted to participate. Due to the poor quality of the internet connection, the

Northern Province group was disconnected multiple times, suffered from voice/video outages, and ultimately was unable to participate in the workshop (67, 2021). A separate MSME owner noted that the lack of consistent electricity and internet connectivity was an ongoing issue in both their work and home location, and they had suffered multiple electrical and internet outages per month (76, 2021). Similarly, in a 2021 study, poor or no internet connectivity was the most frequently cited barrier by online MSMEs (DAI, 2021).

As most Sri Lankans connect to the internet via mobile phone, a strong and reliable 3G/4G signal is essential. As noted by Figure 12, a 2021 survey revealed that while Western Province and urban centers across the rest of Sri Lanka have decent signal coverage, more than half of people surveyed in rural areas outside Western Province reported poor signal quality and cited it as a constraint to online education. Similarly, infrastructure limitations often mean business limitations for rural-based MSMEs.

ICTA has been working with the Sri Lankan Telecommunications Regulatory Commission (TRC) since March 2020 to expand digital infrastructure into rural areas, however, we were unable to find information on how such expansion was prioritized (64, 2021). ICTA and the TRC should engage rural MSME stakeholders and survey their current needs and challenges, to better understand how they should prioritize digital infrastructure expansion in these areas.

**ACCESS TO
RELIABLE INTERNET
REMAINS AN ISSUE
IN RURAL AREAS
OF SRI LANKA,
PARTICULARLY
OUTSIDE WESTERN
PROVINCE.**

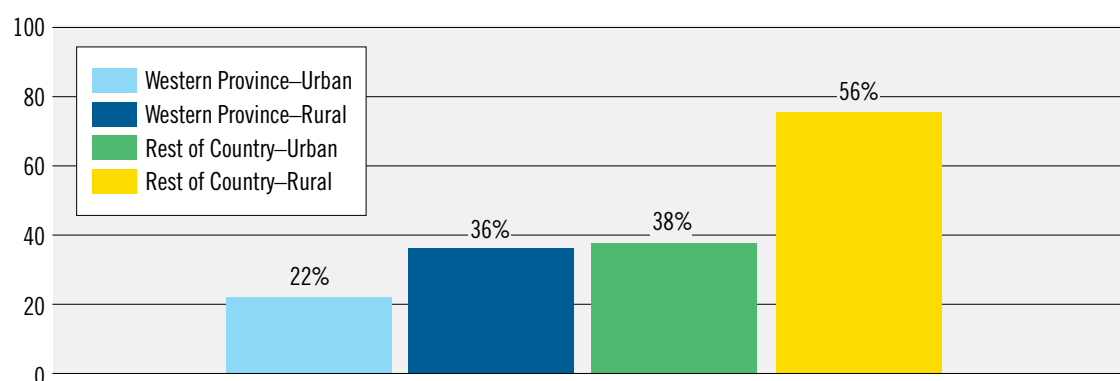


FIGURE 12. POOR CONNECTIVITY AS A CONSTRAINT OUTSIDE WESTERN PROVINCE/URBAN AREAS (LIRNEAsia, 2021)

Challenges with Governance

Lack of Effective Coordination and Communication

Between MSME-Focused Organizations While the Sri Lankan government, aid organizations, and chambers of commerce/business associations continue to dedicate a great deal of attention and resources to MSME growth and digitization, the lack of coordination and communication has blunted the effectiveness of these programs and resulted in confusion across all parties, a lack of coherent or consistent policy, duplication of effort, gaps in coverage, and ultimately ineffective outcomes (69, 2021). Government and chambers of commerce interviewees recognize the ineffectiveness of such a fragmented approach to MSME assistance efforts. They pointed to instances of duplication of efforts, as well as outright competition between different government organizations as evidence of the dysfunction in assistance efforts. Interviewees noted that changes in government leadership often resulted in significant changes in the government structure, including the elevation (or abolishment) of ministries, as well as changing

authorities for government organizations, often wholly dependent on the priorities of the administration in power (67, 2021) (70, 2021) (66, 2021). One interviewee noted his organization had spent multiple years developing a policy for the promotion and development of MSMEs, only for a new government administration to completely abandon the policy following the election cycle (66, 2021)

Multiple studies have identified a lack of effective coordination and communication mechanisms between different government ministries and departments. In 2019 study, MSMEs reported they were often directed to different government organizations for the same issue. MSMEs reported this inconsistency led to duplication of effort, confusion, conflicts, and ineffective resource allocation (Ernst and Young; FJ&G De Saram, 2019). MSMEs expressed a desire for a centralized, empowered, and well-coordinated MSME Authority that would lead to a coherent, well-publicized, enduring commitment to MSME digitization (66, 2021) (Ernst and Young; FJ&G De Saram, 2019).

The idea for a centralized MSME Authority is not new—a 2002 task force comprised of government officials, businesspeople, and members of chambers of industry produced a white paper recommending an SME Authority (SMEA) as a “focal point for [SME] support” and responsibility for “implementation of short term, medium term and long-term strategies for SME development.” The paper further recommended the SMEA be an independent body which could also serve as a central location to coordinate and facilitate licensing, registration, and information delivery to SMEs (*Ministry of Industry and Commerce, 2016*). Unfortunately, a subsequent review carried out by the Asian Development Bank did not support the task force recommendation of establishing an SMEA. In their opinion, establishing an SME authority would “impede the prevailing linkages and coordination” that existed between the now-defunct Ministry of Enterprise Development, Industrial Policy and Investment Promotion and other ministries and levels of government (*Ministry of Industry and Commerce, 2016*). With the benefit of hindsight, it is now clear those prevailing linkages and coordination were not sufficient to effectively facilitate MSME digitization. As such, there remains a need for an overarching MSME Authority to better coordinate and oversee MSME-related activities.

Large Percentage of Unregistered MSMEs

Unregistered enterprises make up 43% of all enterprises in Sri Lanka, with micro and small enterprises comprising nearly all this number. Of the 1.02 million enterprises in Sri Lanka, 91.8% (935,736) are classified as micro, 7.0% are classified as small (71,126), 1.0% are classified as medium (10,405), and 0.2% are classified as large (2,414), 45% of micro enterprises are unregistered, as well as 11% of small enterprises. Less than 0.1% of the medium and large

enterprises are unregistered. (*Department of Census and Statistics, 2013/2014*) Many informal MSMEs are unaware of the benefits, such as access to resources and programs, they would receive through formally registering with the GoSL. In addition, MSMEs choose not to register based on several other factors including fears there will be an increased tax burden, confusing or inconsistent information provided when they attempt to register their business, a lack of consistent rules regarding registration of partnerships and sole proprietorships, and the lack of information available on licensing and approval requirements. Depending on the business activities that the MSME wishes to engage in, they may be required to apply for licenses, permits and approvals, many of which require yearly renewal (*Ernst and Young; FJ&G De Saram, 2019*). To avoid this hassle, many MSMEs choose not to participate, particularly as they perceive no negative impacts from the lack of registration to their business activities.

Unfortunately, there can be significant negative impacts to the lack of formal registration, even if unnoticed by the individual MSME owner/operator. As non-registered MSMEs, many of these businesses may not appear in government databases and may not be eligible for (nor aware of) government assistance or training programs that may help with their digitization and growth efforts.

A Lack of Effective e-Government Services for MSMEs

Though Sri Lanka boasts a robust modernization program geared towards expansion of e-government services, and scores “high” in the latest edition of the UN’s E-Government Development Index (EGDI), there is room for improvement, particularly among MSMEs. A 2019 study noted that, despite Sri Lanka’s “high” EGDI rating, only 30% participants used the internet to access government information,

and only 14% of those who used government e-services used their advanced features such as submit a form or apply to a program. Many users (47%) who did access government websites used it simply to obtain information or download a form (*Daily FT, 2019*). Anecdotally, several MSME owner/operators spoke of the duplication of labor required when filling out customs forms for import/export purposes. MSMEs noted that, even after filling out the required documentation via the online portal, they were also required to submit paper copies of all documentation as the “real” forms. When questioned by MSMEs, customs officials explained the digital copy was not yet “official”, and thus the paper copies were also required (80, 2022) (78, 2022). Multiple MSMEs explained that it was difficult to find the information they were looking for on government websites. Interviewees noted there appeared to be minimal standardization across different ministry websites, which made navigation and searches for documentation very difficult. MSMEs also spoke of a lack of response when attempting to ask a question via the contact portals on government websites. MSMEs noted online services for small business registration varied greatly by province, and they found it to be invariably “safer” to conduct this kind of business via non-electronic means (81, 2022) (80, 2022) (78, 2022).

The negative initial experience many MSMEs had with government websites and other online services made them less likely to use them in the future. Further, the duplication of labor by requiring paper copies as well as online forms called into question the utility and purpose of the online service itself. Further, a government development official admitted that most MSMEs he talked to were unaware of recent developments in e-government services, and that there was a need to “market these services more effectively” (66, 2021).

As of 2021, ICTA, supported by the World Bank, was piloting the “Form.gov.lk initiative” program at the Divisional Secretariat level, with the goal to provide the capability to fill and submit relevant information and documents digitally without having to visit government offices. The initial list of services ranged from civil registrations (births/deaths) and small business registrations to online processing of agricultural transport permits (*World Bank, 2021*). This is a step in the right direction, and we encourage establishing an objective assessment process to determine if these services are working as intended and if their success can be replicated on a wider scale. Following this assessment, we recommend a nationwide awareness campaign to introduce the system and ensure all potential stakeholders understand the benefits of its use.

Ineffectiveness of Current Upskilling/Workshop Model

MSME stakeholders understand the importance of skills development programs and workshops to facilitate digital adoption among MSMEs, however, they also acknowledge the current model has been ineffective in achieving those goals. A government official noted that the longest-term government-sponsored digital upskilling programs run for 2 – 3 months at the most, and even these programs have not been effective in improving digital skills and facilitating digital adoption among MSMEs. The government official noted upskilling must be a continual process, and should leverage as many sources as possible, including chambers of commerce, business associations, and other MSMEs, not just the government (64, 2021).

One MSME interviewee cited a recent single-day virtual workshop run by ICTA/EDB on export readiness as “helpful”, but noted they received no response to their attempts at follow-up on topics covered by the workshop they attended. After a few attempts at

contact, this MSME owner gave up, as they did not know who else they could reach out to for help. This MSME owner said that, while “any” training was better than none, most MSME owners needed longer-term (and continuing) assistance to truly implement the technologies discussed in a workshop (81, 2022).

Further, chamber of commerce and business association interviewees noted the frequency and content of government-provided workshops were often based on the targets of that institution (i.e., supply-driven), rather than the needs/requests of their target audience (i.e., demand-driven) (70, 2021) (71, 2021) (72, 2021) (80, 2022)

In a separate study, MSME owners provided similar criticism of government trainings/skill enhancement programs conducted by government entities. Feedback from MSMEs surveyed included the following issues:

- Programs were not customized to the needs of MSMEs.
- The training curriculum was not updated to address current technology/market/economic conditions (Ernst and Young; FJ&G De Saram, 2019).

Multiple MSME owners, when asked their preference on assistance, independently pitched the idea of a “model” or “champion” MSME, promoted by their local business association or chamber of commerce, that would be willing to assist struggling MSMEs over the long-term in the learning, selection, and effective use of specific digital tools for specific purposes (80, 2022).

CONCLUSIONS

There is plenty of reason for optimism at the prospects of digitization and growth in Sri Lanka’s MSME sector.

Much progress has been made already, and many of the elements needed to facilitate MSME digitization either already exist in some form or are in the process of being developed, piloted, and/or implemented. These elements include: organizations and programs devoted to MSME and digitization needs; language, digital and financial literacy workshops and training programs; recognition of the need for greater infrastructure coverage in rural areas; a push for expanded e-government services, etc. As such, we view the barriers identified for Sri Lanka—low digital literacy, internet access issues in rural areas, lack of awareness of digital tools and programs, and structural barriers—as ones that are surmountable in the near to medium term, with a committed effort (and commensurate dedication of resources) by stakeholders.

While these positive elements do exist, they often seem to exist in a vacuum, without effective ties to other groups or organizations which may be doing similar or complementary work. Further, many of these programs seem to stall out due to a lack of funding, a change in government leadership, or other issues. Finally, there does not seem to be a robust mechanism for monitoring and evaluation of these programs, to ensure they are reaching their intended target audience and resulting in the outcomes for which they were designed.

In short, many of the pieces for facilitating the digitization of Sri Lanka’s MSME sector exist, but they must be brought together in a coherent, consistent, and unified fashion. Further, there must be a commitment to continue these programs for the long-term, if monitoring/evaluation shows they are effective. Finally, the delivery mechanism for (and content of) the myriad of programs available to MSMEs should

be re-evaluated, as the feedback from interviewees indicates the programs are largely not reaching their intended audience, nor are participants satisfied with the programs in which they have participated.

RECOMMENDATIONS

As referenced in the preceding section, the recommendations that follow are both “top down” and “bottom up” in nature. A guiding central authority to coordinate MSME assistance, with well-defined authorities and communication ties to pertinent government organizations is key to effectively manage the numerous stakeholders (and the breadth of MSME-related programs) involved in the process, to ensure all parties are working off a shared vision. This broad approach helps to effectively leverage information, time, money, people, and technology across multiple organizations while minimizing duplication of effort or other wastes of resources. A central MSME authority could also assist in

implementing a standardized method by which to monitor and evaluate the effectiveness of MSME-related programs and would go far in encouraging a collaborative (vice competitive) atmosphere for MSMEs.

From interviewees in the preceding sections, the broad consensus was that “more” government programs would likely not address their prevailing digitization needs, unless there were expansions of programs (pilot or otherwise) that had already been shown to be effective. Interviewees want to see an expansion of the methods by which training programs and workshops are advertised and delivered. These programs should focus on building an enduring (vice transactional) relationship between individual MSMEs and their government, chamber of commerce/business association, or other organization counterparts. Finally, multiple MSME interviewees supported the idea of leveraging a “model” or “champion” MSME to educate other MSMEs on specific business or digitization topics.

TABLE 7. RECOMMENDATIONS – SRI LANKA

#	Challenge Area	Recommendations for State/USAID	Recommendations for Sri Lankan Government
1	Governance	Work with government and non-governmental organizations (i.e., chambers of commerce and business association) to identify issues with the current MSME assistance environment. Promote and facilitate the development and expansion of both formal and informal ties. Share best practices on developing a “whole of government” approach to MSME management.	Formalize a National MSME Authority, with the mandate to address the needs of the MSME sector and coordinate all MSME-related activities. This organization could be built from the current NEDA and IDB and could also absorb other MSME-related entities such as Small Enterprises Development Bureau (SED). Establish formal communication and coordination mechanisms with all related government entities.
2	Governance	Work with government and non-governmental organizations (i.e., chambers of commerce and business association) to promote and facilitate information-sharing and awareness. Share best practices on inter-governmental information sharing, as well as relevant case studies/ success stories from other countries.	Develop a shared national-level MSME database or establish a formal mechanism for sharing access to existing national-level MSME database(s) among MSME-related government entities. This database would be used/referenced by all government organizations involved with MSMEs
3	Governance/ Awareness	Promote/assist in publicizing the benefits associated with formal business registration, as well as new options to simplify the business process (such as forms.gov.lk)	Investigate options (and obtain feedback on pilot programs such as forms.gov.lk) for simplification of the formal registration and compliance process for MSMEs, to encourage broader formal registration of MSMEs.
4	Awareness/ Literacy	Conduct surveys for feedback from users on the current “one stop shop” and “Regional Cluster” concepts. Offer program suggestions and best practices to expand course offerings and the reach of these hubs, based on feedback. Share and promote success stories that are culturally/ demographically relevant	Continue and expand the current district-level “one-stop shop” hub concept. Investigate integration with ICTA’s “Regional Cluster” concept to expand ICT-related offerings. Add programs to conduct translation/ interpretation of ICT-related topics into Sinhala or Tamil, to facilitate the early adoption of these technologies among non-English speakers. Investigate feasibility of these hubs offering basic (or digital-focused) English language classes to augment other English literacy efforts.
5	Awareness/ Literacy	Work with government, chamber of commerce, and business associations to develop/promote MSME “success stories”. Provide funding and facilitate connections between “model” MSMEs and those MSMEs requiring assistance. Work with chambers and commerce and business associations to document progress, processes, and lessons learned from each engagement.	Work closely with chambers of commerce and business associations to identify “model” or “champion” MSMEs among their members that excel in a certain area (i.e., digital literacy or digital tool adoption/ use), to be leveraged to teach other local or similar-sector MSMEs. In a similar fashion, chambers of commerce and business associations could facilitate partnering of similar-sector MSMEs owned by older individuals with younger MSME owner/operators to encourage information exchange and lessons learned.

TABLE 7. RECOMMENDATIONS – SRI LANKA *(Continued)*

6	Awareness	Fund efforts to develop and expand digital awareness campaigns. Provide frameworks/best practices for a monitoring/evaluation program and feedback mechanisms for existing and proposed awareness campaigns.	Work closely with district-level chambers of commerce and business associations, as well as district-level government officials to develop and expand awareness campaigns targeted at MSMEs for training/workshop opportunities in digital literacy, digital tool use, financial literacy, business literacy, e-government services, benefits of business registration, etc. Utilize all major media sources (TV, radio, print, email, social media, phone, SMS, etc.) and develop such materials primarily in Sinhala and Tamil.
7	Awareness/ Literacy	Work with implementers and government stakeholders to survey and evaluate proposed workshop course content. Provide frameworks/best practices for a monitoring/evaluation program and feedback mechanisms.	Work closely with implementers/content delivery stakeholders, conduct a pre-survey of their intended audience to ensure the proposed course content and method of delivery will meet their needs. All such programs should institute a monitoring and evaluation (M&E) program and formalized feedback mechanisms to ensure they are reaching the right audiences with the right content.
8	Digital Literacy	Provide frameworks/best practices to develop and implement a digital skills program. Provide insight on monitoring/evaluation programs and feedback mechanisms.	Establish an incentive program for individuals with digital skills to seek and maintain employment with MSMEs. Such a program may help bridge the digital gap for MSMEs, enabling companies who lack digitally literate employees to take advantage of digital solutions.
9	Access	Share knowledge of emerging technologies for extending internet connectivity and digital access in low-access areas.	Engage rural MSME stakeholders and survey their current needs and challenges, to better understand how the government should prioritize digital infrastructure expansion in these areas.



COUNTRY CONTEXT

As the world's third largest economy, India has grown rapidly in recent decades. In fact, the country's economy is one of the fastest-developing in recent history (*Bank, n.d.*).

India's micro, small, and medium-sized enterprise sector is one of India's important sources of growth. MSMEs' share of total GDP output over the period 2014 – 2019 averaged 29.6% (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, p.22*). Over the same period, the MSME sectors' growth rate averaged 11.9%, outpacing the overall Indian economy (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, p.22*). Further, the MSME sector is the largest single employer in India's agricultural sector and is the source of nearly one-half of India's exports (29,

2021). MSMEs have thus proven to be critical to India's economy by increasing exports, diversifying the economy, and growing sectors such as agriculture, manufacturing, and textiles.

There are 42 types of businesses sectors within India's MSME economy, a few of which include leather, retail, and wholesale goods; rubber products; call centers; coir; auto parts; bicycle parts; micronutrients for plants; and more (*Team MSME, 2021*). Micro enterprises dominate India's MSME sector; according to India's Ministry of MSME most recent annual report, micro enterprises represent over 99% of the MSME sector (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, p.24*). Thus, while this paper's scope is primarily limited to SMEs, the presence of micro enterprises in India is so vast that excluding them from the analysis limited our observations and recommendations. Therefore, we assessed India's MSME sector in our exploration of digitization in India. Enterprises of all sizes have increasingly harnessed growth opportunities

presented by modern technologies and digital applications in telecommunications, healthcare, and electronics where growth is expected in the next five years. However, 94% of MSMEs are unregistered businesses, making it difficult to evaluate and provide targeted solutions for digital innovation to them (33, 2021). Both national and subnational governments within India are facilitating digital innovation by digitizing public resources, designing programs, and creating incentives for adopting digital tools.

Despite these successes, several factors stunt the growth of MSMEs, such as lack of access to electricity, technological resources, and digital infrastructure in conjunction with societal inequalities; limited access to public programs; and the negative economic impacts of the COVID-19 pandemic.

The following sections examine these barriers and make recommendations to State and USAID on how they can work with the government of India to improve the digital ecosystem and create innovative interventions to increase digital adoption in the MSME sector.

GEOGRAPHIC FOCUS AREAS

With limited resources lessening our ability to explore the entire country of India, we used the following criteria to select six states for the focus of our study:

- The Ministry of MSMEs' national government schemes
- MSME policies
- Resources to MSMEs
- The existence of state policies
- Initiatives
- Reforms aimed at supporting MSMEs, entrepreneurs, digital skills development programs, and the amount of state/local adoption of digital technologies

In addition, we reviewed evaluations of MSME growth and predictive models of new MSME growth from national and state reports to target specific states for this research. Focusing on states where MSME growth occurred provided an opportunity to identify key policies (e.g., regarding taxes, gender, etc.) infrastructure, digital tools, and innovative training environments to potentially scale to similar regions where MSME growth had plateaued or declined. The team also sought geographic, political, social, and economic diversity within India to ensure that the research provided an array of different demographics. Finally, the MITRE team considered areas where the Department of State and USAID could have significant impacts in these states/regions. Accordingly, we selected six states of interest:

- **Uttar Pradesh**, located in Northern India, has the largest population of MSMEs at more than 9 million, and highest proportion of MSMEs in its economy at 14% (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, pp. 28 – 30*). The state economy is largely based on agriculture, and many MSMEs produce handicrafts, textiles, carpets, and leather products.
- **West Bengal**, an Eastern Indian state, is one of the highest-population density areas in the world. Despite a large urban area in Calcutta, West Bengal has a large rural population and a regional economy dominated by MSMEs in the agricultural and textile sectors. West Bengal has the second largest estimated number of MSMEs, at 9 million (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, pp. 28 – 30*).
- **Telangana** is unique among Southern Indian states because it features highly successful, modern industries and has high-tech centers in cities such as Hyderabad. Surrounding rural areas reflect rural,

agricultural, and more traditional industrial centers found in smaller, less modernized cities.

- **Madhya Pradesh**, a Central Indian state with the third largest population, is predominantly a state dominated by agriculture and medium-sized cities with traditional industries. The state is estimated to have the fourth largest number of MSMEs, at 2.7 million (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, pp. 28 – 30*).
- **Maharashtra**, a Western Indian state with large, wealthy coastal cities such as Mumbai that feature successful technology and finance sectors, surrounded by much more rural, agricultural interests outside of the city.
- **Assam**, a small, very rural Northeastern state with an economy dominated by small hold agriculture.

Limitations

Two limitations may influence the perspectives, observations, conclusions, and recommendations in this paper.

- **First, information on micro enterprises is lacking, as most are considered informal businesses.** Many micro-organizations keep their informal statuses because they experience challenges with the complexity of the national and state regulatory environment and bureaucratic processes creating hurdles to register their organization (*Korreck, 2019*). Informal micro-organizations make up the vast majority of MSMEs in India and having access to increased data on distributions within this designation (including variance of output, employment, and capital and investment levels) would be useful in understanding these enterprises places within the larger economy. Specifically,

additional information on micro enterprises' barriers to growth; business needs; and access to/uses of electricity, digital infrastructure, and digital tools could improve government or development actors' ability to design interventions that improve digital skills. As such, an early recommendation is to encourage the study of micro enterprises, their connectivity, and uses of digital tools and skills.

- **Second, the study was limited by India's size and the realities of the COVID-19 pandemic.** The focus on the six states above may limit the ability to extrapolate conclusions and recommendations to the entire nation. Further, all interviews were conducted remotely due to the pandemic. Conducting research on technology access and exclusively using digital technologies limited our reach to those enterprises with existing access and digital skills, giving our study an inherent bias worth recognizing.

OBSERVATIONS

MSME Definitions and Distribution in India

India updated the legal definition of micro, small, and medium enterprises in 2020 as part of the Atmanirbhar Bharat package of reforms that aimed, in part, to simplify MSME regulations and improve ease of doing business. The new definitions include turnover amount intervals in addition to the intervals of investment in plant and machinery, which India has historically used as a proxy metric for gauging employment numbers of each enterprise. Additionally, the new definitions eliminate different categories of micro, small, and medium enterprises based on sectoral differences.

The current legal definitions for MSMEs in India and basic distribution of enterprise types are detailed below in Table 8.

Micro enterprises are those with investment levels up to 1 crore, or ten million rupees, (approximately \$140,000 USD) and with turnover up to 5 crore rupees (approximately \$640,000 USD). Micro enterprises make up 99% of total MSMEs. While the legal definition has historically focused on turnover data as a proxy for unavailable employment data, a more recent estimation is that nearly all MSMEs have fewer than ten employees. These two statistics suggest that enterprises are extremely concentrated in the lower ranges of the micro designation. Last, there are more micro enterprises operating in India's

informal economy (i.e., they are unregistered) than the other MSME designations. As is discussed later, this distinction is relevant because unregistered enterprises are ineligible to receive the benefits of numerous government programs aimed at increasing growth through financial and technical assistance.

Small enterprises are those with investment levels up to 10 crore rupees (approximately \$1.4 million USD) and with turnover up to 50 crore rupees (approximately \$6.4 million USD).

Medium enterprises are those with investment levels up to 50 crore rupees (approximately \$6.4 million USD) and with turnover up to 250 crore rupees (approximately \$33 million USD).

TABLE 8. CURRENT LEGAL DEFINITIONS FOR INDIA'S MSMEs AND BASIC ENTERPRISE TYPE DISTRIBUTION
(GOVERNMENT OF INDIA, MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES)

Sector	Criteria	Micro	Small	Medium
Manufacturing	Investment	< Rs. 25 lakh (\$0.03M USD)	> Rs. 25 lak (\$0.03M USD), < Rs 5 core (\$0.6M USD)	> Rs. 5 crore (\$0.6M USD), < Rs. 10 core (\$1.4M USD)
	Annual Turnover	Rs. 5 crore (\$ 0.6M USD)	Rs. 50 crore (\$6.8M USD)	Rs. 250 crore (\$34M USD)
Service	Investment	< Rs. 10 lakh, (\$0.01M USD)	> Rs. 10 lakh (\$0.01M USD), < Rs. 2 core (\$0.3M USD)	> Rs. 2 core (\$0.3M USD), but does not exceed Rs. 5 core (\$0.6M USD)
	Annual Turnover	Rs. 5 crore (\$0.6M USD)	Rs. 50 crore (\$6.8M USD)	Rs. 250 crore (\$34M USD)

India's MSMEs and Their Role in the Economy

India has approximately 63 million MSMEs, and they provide around 30% of the country's GDP (approximately \$900 billion). However, breaking down these overall numbers provides a more refined understanding of the MSME landscape, growth opportunities, and applications of technology; it also leads us to believe the likelihood of an enterprise having reliable access to electricity and digital connectivity (or personal connective devices) as well as digital skills. These factors decrease the smaller and more rural the enterprise—and the more reliant the enterprise is on female leadership, employment, or ownership. Thus, there are significant inequalities of opportunity and growth potential for these enterprises, which is discussed in greater detail in the Socio-Demographics and Stratification section of this paper. Addressing these issues are the basis of our recommendations for future interventions to meet the needs of the most vulnerable MSMEs to include improving digital access and skills.

Digital Adoption

India is one of the largest and fastest growing markets for digital consumers, with over 560 million internet subscribers and over 1.2 billion mobile phone subscriptions. India's digital adoption rate is one of the fastest growing among emerging economies. Digital consumption growth in the public and private sectors within India is also expanding, with more than 10 million businesses on a common digital platform through a goods and services tax. Based on predictive estimations, the number of internet users in India will increase to approximately 750 million, and smartphone penetration will increase to approximately 650 million by 2023.

While national digital adoption accelerated with the COVID-19 pandemic, India MSMEs' digital adoption

and digital infrastructure development substantially increased, and businesses became more dependent on technology to keep afloat throughout the global shutdown. As the move to remote work grew, many MSMEs had to invest in and become knowledgeable of technology to maintain their business. During a recent survey, 50% of online MSMEs reported that digital tools were essential to keeping their business running during the pandemic (*DAI, 2021*). However, there were several barriers for MSMEs as many micro and small businesses struggled to integrate digital technology in their business operations, including: financial constraints to purchase digital tools, lack of skilled labor, infrastructure and barriers to the availability of digital technology, and inadequate support from executives which caused organizations to reduce in size or shut down entirely (*World Bank, 2021*). Furthermore, while digital adoption increased across MSMEs, disruptions for MSMEs caused by the pandemic impacted earnings by 20 – 50%, with up to 78% of jobs lost compared to 2017 (*Tripathi, 2020*).

Despite the importance of digital adoption for MSME business growth, the level and type of digital adoption differed significantly across business sectors and organization sizes. Organizations that reported having early digital adoption, and that were considered in the top 25 of digital usage, were from two to three times more likely to use digital software for enterprise resource and budget planning, business optimization, and customer relationship management and nearly 15 times more likely to have a central enterprise-wide digital strategy and management compared to those that were in the bottom quartile (*McKinsey Global Institute, 2019*). Furthermore, organizations that embraced digital adoption to optimize the effectiveness of their business had a higher likelihood of revenue growth year-over-year (*McKinsey Global Institute, 2019*).

India's national and state governments recognized the role of digital adoption to increase MSME growth and have done much to support the uneven distribution of digitization across sectors and business sizes by clarifying regulations to improve infrastructure through new national, state, and local policies (*McKinsey Global Institute, 2019*); however, more infrastructure work needs to be accelerated to promote digital adoption for MSMEs in India.

Public Policy

India has developed and instituted a policy environment that aims to modernize India's business culture, improve the ease of doing business in the country, and enable increased access and use of personal technologies. These goals have resulted in numerous institutions, policies, and programs relevant to the growth prospects and digitization of the MSME sector. This section provides an overview of those policies and synthesizes perspectives about their strengths and weaknesses.

Three notable trends appear from the overview:

- **First** and most notably, the national and state governments' concerted effort to simplify and streamline the enabling business and tax environment in which MSMEs operate. India's efforts have included increasing and improving access to digital infrastructure and tools, designing programs to aid the development and modernization of MSMEs, and reducing regulatory burdens and processes to allow MSMEs to operate in the formal economy more easily, which grants them access to the benefits of government programs. These efforts fit into India's overall economic goal of improving the ease of doing business in the country, an effort that has seen marked improvement across several indicators and metrics.
- **Second**, the government has undertaken efforts to improve e-government access to information and services.
- **Third**, the government has recently developed procurement policies to create demand specifically for MSME products and services.

Relevant Federal Legislation

MSME Act of 2006 was a major update to the definitions and MSME environment established by the 1951 Industries Development and Regulation Act. The 2006 law instituted more modern designations for micro, small, and medium enterprises. Overall, the Act aimed to attract investment to businesses, provide regulatory relief to exporters, increase employment, and generally improve the ease of creating enterprises and conducting business.

A key aspect of the MSME Act is that micro and small enterprises are not required to register with the state, a topic discussed as "formalization" in the literature, whereas medium enterprises are required to do so (*Global Alliance for Mass Entrepreneurship, 2020*) (*Digital India, 2019*). It is understandable why micro and small enterprises, to date, have not been required to register considering the capacity required to do so and both the state and enterprises' current inability to enforce and achieve compliance across the nation. However, a negative result has been that only medium enterprises and voluntarily registered micro and small businesses have access to numerous government programs that help their enterprises attain digital and financial resources and skills, as discussed below.

The literature highlights the dilemma many micro and small businesses face when deciding whether to leave the informal economy and register as a formal enterprise. Disincentives to registering include navigating complex bureaucratic processes,

meeting burdensome compliance standards, passing inspections, and entering a formal tax system that adds costs not otherwise incurred. Conversely, foregoing formalization decreases an enterprise's access to programs and their benefits, of which many are designed to help firms grow and modernize through increased access to financial and technological resources and skills.

The literature suggests a widespread lack of knowledge on the benefits of formalization. Further, research shows a strong relationship between MSME formalization and business growth (*Global Alliance for Mass Entrepreneurship, 2020*). As described throughout this section, it is clear the government has attempted to both decrease the disincentives to formalization by simplifying tax, regulation and other bureaucratic processes while also designing numerous programs aimed at MSME growth and capacity building. In addition to issues such as corruption and mistrust of government, many MSMEs are simply unaware of programs for which they may be eligible through formalization and remain skeptical of registering.

In 2015, the government set up Udyog Aadhaar, a Ministry of MSME program that issues unique identification numbers (UAMs) for registered entities. According to the 2020 – 2021 MSME annual report, the portal shows 10,232,451 enterprises have attained UAMs, out of a purported 60+ million MSMEs (*Government of India, Ministry of Micro, Small and Medium Enterprises, 2021, p. 33*). Thus, approximately one in six MSMEs can access the benefits of government programs. Further, the Udyam Registration Portal, established in 2020, allows free, paperless, digital registration of MSMEs, a promising development that may allow for more MSMEs to attain certain benefits.

The Companies Law of 2013 and the Goods and Service Tax of 2017

The Companies Law of 2013

update is a multifaceted approach to simplifying business codes, other regulations, and the ease of forming a business. While this legal reform applies to all sizes of enterprises in India, it fits in with a larger effort to improve the ease of doing business through decreasing the compliance and regulatory burden placed on enterprises. The 2017 institution of the Goods and Services Tax reform lowered the tax burden, decreased the complexity of the tax code, and barred certain types of taxation. The legislation's overall purpose was to reduce barriers to business growth. These bills make clear the government's goal of decreasing regulatory and tax burdens, which are relevant to MSMEs as they address factors that disincentivize enterprises, primarily MSMEs, from registering as formal entities.

Government Procurement Policies The national government in India created a 20% procurement target for MSMEs in 2012, then increased it to 25% for micro and small enterprises in 2019. The government designated 358 specific items for public procurement, including agricultural, textile, and manufactured products. The central government's procurement policy includes a 4% target for specific lower castes and 3% for female-owned enterprises (*33, 2021*). Multiple state governments have enacted procurement policies as well, including Telangana (20%), Assam (25%), Uttar Pradesh (25%), and Maharashtra (20%). Overall, India's procurement policy ensures supply of essential items to public entities while also creating an important source of demand for MSMEs.

Literature on India's procurement policies points out low awareness of procurement policies and the complex nature of procurement rules as barriers to more widespread success. Further, the low emphasis on supply from lower castes and female-owned enterprises presents itself as an area for improvement.

Taken together, the MSME Act, the concerted effort to improve ease of doing business, and procurement policies are important steps toward enabling MSME growth and encouraging formalization, which can then increase the proportion of MSMEs eligible to receive programs designed to improve, among other things, digital skills.

Relevant Institutions and Government Programs

The literature and our interviews identified two primary needs of many MSMEs:

- First, MSMEs seek improved access to electricity and lower electricity and internet connectivity costs and request improved training programs offering digital skills.
- Second, a nearly universal topic among MSMEs needs is the need for increased access to finance and larger amounts of finance.

The below section describes relevant programs aimed at addressing these needs. Unlike in many other developing contexts, India does not need to develop institutions and programs. Rather, India faces the challenge of increasing access to and the reach of these programs.

The federal MSME Ministry is tasked with formulating policy for the MSME sector's growth and has numerous support agencies, such as the Khadi and Village Industries Commission (KVIC) and the Small and Industrial Development Bank of India (SIDBI) discussed below, which support the planning, promotion, and execution of various schemes. KVIC is a notable support agency; it has developed programs for rural development for more than 60 years. India and its states have a long history of supporting MSMEs through various industrial, scaling, and sector-specific programs. SIDBI provides financing and support to female entrepreneurs and MSMEs.

Digital India

The 2015 Digital India initiative is among India's most prominent national efforts to build digital infrastructure, provide government resources and services online, and digitally empower all Indians. While Digital India is a national initiative, it is important to the MSME sector because of its premise to extend physical and digital infrastructure to rural areas where there is a high concentration of MSMEs.

A main goal and success area of Digital India is to expand internet services while decreasing costs. By 2020, the program had expanded internet access to the point that more than 770 million Indians had regular connectivity (*Digital India, 2019*). Prices for the use of data also decreased markedly. These facts point to the program's overall success, but other statistics from various surveys point to the remaining need to bring basic technological devices to women and infrastructure to the most rural areas.

Digital India also built on the e-governance initiatives dating back to 2006 in India by requiring digitization plans for all government services. A key success of this has been streamlining bureaucratic process through online submission of certain documents.

The program's empowerment efforts reflect direct needs reported by MSMEs in numerous reports and surveys. These include the need to deliver services and trainings in many Indian languages and a focus on improving digital literacy.

The Digital India initiative has proven capable of improving digital infrastructure. The main opportunity from this program is to continue expanding and targeting resources toward demographics that may otherwise be the last to attain connectivity.

ASPIRE and Startup India

A Scheme for Promotion of Innovation, Rural Industries, and Entrepreneurship (ASPIRE) is a program that was initiated in 2015 for MSMEs. Employment creation and support for start-ups are main functions of the program; secondary goals include increasing technology adoption, supporting technology enterprises, and providing mechanisms for technology transfer to other businesses. Startup India is a related program, but focuses specifically on incubating businesses and increasing employment for female entrepreneurs and members of certain castes. The program offers loans between \$14,000 and \$140,000. Since 2016, the program has provided 116,000 loans providing more than \$1 billion in credit (*Datta, 2021*).

Finance-Related Schemes

Credit Linked Capital Subsidy Scheme for Technology Upgradation is a program for MSMEs that provides 15% subsidies for implementing or improving technologies used for business, including machinery and computers. The program was initiated in 2013 and, like many other schemes, requires a valid UAM number for participation.

The Mahila Udyam Nidri (MUN) schemes implement SIDBI's policies of lending and financial benefits to female entrepreneurs. In addition to providing credit, MUN offers technological services and skills such as typing trainings, technology repairs, connectivity to information and communication technology resources, and access to electronics and personal technologies such as laptops and smartphones.

In addition to India's financial schemes, the World Bank announced in a 2021 press release that it had approved a \$500 million program focused on supplementing India's existing efforts to assist the

MSME sector. The World Bank funding will help Indian MSMEs "return to pre-pandemic production and employment levels" while also improving productivity, addressing the gender gap, and promoting sustainable investments (*World Bank, 2021*). The World Bank's support strives to improve technological penetration and capacity within the MSME sector to achieve those ends.

Cluster Development Schemes

There are numerous cluster development initiatives at the state and federal levels. Cluster development interventions focus enterprises in either one industry or similar industries in a geographically concentrated area. These programs focus on improving processes, incorporating new technologies, and increasing output in industries that dominate local markets. Generally, development experts view cluster development as highly effective because they increase productivity and introduce new technologies that can help numerous enterprises with each development program.

Relevant State Policy

- **West Bengal** MSMEs in the textiles and agricultural sectors are the drivers of the state's economy. The state's centralized government office devotes numerous resources to the MSME sector, including focusing on cluster development, creating an MSME facilitation center, expanding credit availability to MSMEs, and improving infrastructure and connectivity. A hallmark of the state's efforts is the development of the Silpa Sathi portal, an online tool helping entrepreneurs and investors start businesses, register, and take advantage of government resources and programs.
- **Uttar Pradesh** The state's large number of manufacturing and exporting MSMEs have benefited

from institutional support focus on attracting investment and supporting entrepreneurs. A hallmark of the state's support for MSMEs is the One District One Product scheme, which encourages and supports production of products and crafts unique to the state. These products include specific agricultural products, crafts, and clothes that receive indicators of geographic, original productions. The state has utilized cluster development and technological innovation to assist many of these indigenous products and production methods.

- **Telangana** The state's larger urban areas, such as Hyderabad, are known for their technological industries and tech hubs, featuring multinational companies such as Microsoft and IBM. The state has developed a digital networking platform, GlobalLinker, offering e-commerce, digitization, and productivity-increasing tools to improve MSME access to global markets. The state also developed an innovation hub, We-Hub, for female entrepreneurs. We-Hub has a multimillion-dollar investment fund.
- **Madhya Pradesh** The state has invested in educational institutions aimed at producing talented modern workforces and has embraced entrepreneurship training programs in coordination with Department of State initiatives. The state set a goal of 100% access to electricity, which it achieved in 2019 (*Singh, Dr. Kartikeya; Naimoli, Stephen, 2019*). Another goal has been the adoption of digital payments and achieving a cashless society.
- **Maharashtra** The state has developed a female entrepreneurship program with more than \$100 million in support funding. The state has also sought to improve access to digital payment systems, particularly focused on technological

device proliferation and modern payment methods in rural areas.

- **Assam** In 2020, the state enacted facilitation legislation that exempts MSMEs from certain bureaucratic procedures and improves their ease of doing business. In 2016, the state also digitized certain tax collection and other finance-related regulations. The state launched a digital payment scheme that includes incentives for MSME-dominated sectors to move toward cashless systems.

Conclusions, Analysis, & Recommendations

Despite these successes, four themes stand out from the literature as areas in which India can spread resources and opportunities for growth more equitably. First, many of the heavily funded, entrepreneurial-focused, and global market access investments and schemes that help MSMEs adopt and grow using technologies are concentrated in tech-savvy, urban areas. Second, it appears rural areas are focused on foundational infrastructure and accessibility improvements. Third, digital payment, moving to cashless societies, and improving MSME access to credit are popular starting points for improving business applications of digital technologies once connectivity and digital literacy have been achieved. Fourth, convincing informal MSMEs to register remains difficult because many enterprises are unaware of the myriad benefits of various resources and schemes, they would have access to through registration. In absence of this knowledge, MSMEs decide not to register based on existing skepticism of government and the increased costs and regulatory burden doing so would place on them.

Accordingly, our recommendations address each of these trends. Government and development actors' interventions should seek to spread entrepreneurial, investment, and digital skills from urban areas to rural

areas. This requires the continued development and expansion of infrastructure to enable proliferation of personal technologies and adoption. Achieving affordability of connectivity must be a key consideration when expecting increased rural participation in an increasingly digital ecosystem. Further, it appears digital payment systems are the most prominent and popular ongoing application of digital skills to MSMEs (DAI, 2021). Continuing to increase the use of digital payment may be the most natural starting place for business application of digital technologies; outside benefits of this application include attaining digital literacy and skills as well as the creation of transaction data that can be applied to accounting, proving credit worthiness, and attaining larger, more formal, and innovative digital finance opportunities, each of which are cited by MSMEs as barriers to growth. Last, all governments need to employ all available means to make the benefits of registration known to MSMEs.

IMPACTS OF COVID-19 PANDEMIC ON MICRO SMALL AND MEDIUM ENTERPRISES (SMES)

The immediate economic impact of the pandemic-induced shutdowns from March to May 2020 caused a 23.9% quarterly contraction in GDP (*Parliament of India, 2021*). While the full extent to which the SME sector was disrupted by the pandemic is not yet known, India's federal government has identified the SME sector as one of the most adversely affected segments of Indian society.

Many of the vulnerabilities and challenges facing Indian SMEs, discussed later in this paper, have been worsened by the pandemic. In 2020, estimated projections showed that up to 40% of the smallest enterprises would go out of business because of

the pandemic; however, those numbers are likely significant more based on current evaluations (*Global Alliance for Mass Entrepreneurship, 2020*). More than half of micro enterprises had limited or no cash reserves (*Global Alliance for Mass Entrepreneurship, 2020*). The country's existing credit gap worsened during the pandemic, and the number of unperforming loans drastically increased as people's financial livelihoods diminished (*Global Alliance for Mass Entrepreneurship, 2020*). As a result, smaller and more rural enterprises were unable to pay utility and labor costs, and cash-dependent farmers and laborers were among those most negatively affected. Ongoing and future studies are likely to reveal more complete accounts of the pandemic's effects on the SME sector and vulnerable populations.

The acceleration of the transition to digital financial services is a widely reported positive externality of the pandemic's effects on commerce. While this is a welcome development in many developing contexts, despite the dire causal circumstances, the benefits of digital financial services, e-commerce, conducting payments and transactions digitally, and online marketing were available only to those with existing access to and skills with various digital and financial resources. As will be a recurring theme throughout this report, those without existing access to these technologies and relevant skills were largely unable to capture the benefits of the pandemic-caused transition to digital financial services; those SMEs not benefiting are predominantly the smallest enterprises, rural sectors, and female entrepreneurs and workers.

Pandemic Relief

India, like most countries, swiftly enacted a large pandemic relief package, or the Atmanirbhar Bharat Abhiyaan package. The size of this relief effort was

roughly \$310 billion and equaled 10% of India's GDP. India tailored many provisions to support the SME sector; these included automatic loans, credit guarantees, direct equity infusion, and funds to relieve financial stresses present in the SME sector. Launched in May 2020, The Emergency Credit Line Guarantee Scheme, was a main aspect of the relief package; however, the MSME Ministry reported that roughly one-half of the allocated funds were not used (*Parliament of India, 2021*). India's national government conducted a MSME survey (N = 45,000) to determine why only 50% used the credit line and found that: 1) there was a general lack of awareness about the availability of funds, 2) SME owners believed that they were not eligible for the credit, and 3) SME owners were not formalized and did not comply to the government regulations thus were not eligible.

Overall, the lack of SMEs accessing and taking advantage of relief funds is indicative of a larger challenge before the Indian government: getting the most vulnerable SMEs to access the benefits of public assistance. The barriers to addressing this challenge include unregistered SMEs not being eligible for participation, mistrust in government, and lack of literacy required for awareness of and meaningful participation in various programs.

CHALLENGES TO DIGITIZATION

Socio-Demographic Disparities

The digital divide in India continues to create huge disparities and disadvantages for marginalized populations who are unable to access or don't have the knowledge to use digital technologies. The socio-demographic dimensions of India's digital divide have far-reaching implications for MSMEs and their consumers, especially in rural areas.

General Stratification Issues Aspects of Indian history and society have resulted in systemic inequalities nationwide. For decades, the caste system predetermined the availability of workforce opportunity in India. This system assigned Indian citizens a particular class at birth and prevented them from upward social mobility. While today's society has largely rejected this system, it is still deeply entrenched in the social fabric. People from marginalized communities—to include individuals from rural areas, regions where English or Hindi are not the primary language, and/or women have trouble accessing technology, education, employment, and financing and are more likely to live in resource-scarce areas (5, 2021).

The lack of digital infrastructure in rural areas and the high costs of connectivity and hardware make it difficult for rural populations to acquire digital resources, digital knowledge, and opportunities to engage with digital tools (20, 2021). Investments from large commercial organizations and chambers support rural areas by providing MSMEs with technical training and access to hardware; however, few donors support digital infrastructure development (5, 2021). Despite the national and state/local government agencies increased investments in digital infrastructure (about 35% of GDP), the national government estimated that the country will need an additional \$1.5 trillion (USD) for digital infrastructure advancement in the next decade especially in rural regions (*Dangra, 2016*). It appears the lack of digital infrastructure creates ongoing deficits to boost MSME growth and likely will perpetuate poverty for people in rural areas.

Since the internet and technology are dominated by the English language and other widely spoken languages like Hindi, minority language speakers (who are mostly found in rural India) have trouble accessing technology and acquiring the needed skills to use it (24, 2021).

With India having over 425 different languages and dialects, and with over half of the internet content being in English, many users cannot comprehend the information online (*Garg, 2020*). Thus, knowledge accessibility is limited, as a barrier exists for internet users who either do not speak Hindi or English or who have an indigenous language that only exists in oral form. Additionally, smartphones and digital devices become another language barrier, as many devices do not offer support features such as keyboards or alphabets for local languages. Another language barrier is with the e-commerce market, as language barriers become a significant communication gap when selling products to potential customers.

Gender Disparities Both our literature review and interviews revealed significant barriers to the access and knowledge needed to expand technology opportunities for women in India. A recent report from the Observer Research Foundation found that Indian women are 15% less likely to own a mobile phone, and 33 percent less likely to use mobile internet services compared to men. In 2020, the report revealed 25% of adult women owned a smartphone compared to 41% of men (*Mitali, Nikore and Ishite Uppadhayay, 2021*). During interviews, women also expressed that they needed permission from their parents or husband to own a smartphone and that they were forced to share digital devices like laptops and smartphones with their family or spouses (*16, 2021*). Additionally, our interviewees suggested that the Indian culture continues to view female ownership and/or use of mobile devices as an interruption to their domestic labor responsibilities (*18, 2021*) (*16, 2021*) (*37, 2022*).

Systemic access problems to technology can be compounded by explicit discrimination. For example, women still face pressure to fulfill traditional gender roles. This often limits them to unpaid domestic labor

and precludes them from having control over family finances or being listed on legal property documents, and discourages them from pursuing education or a career (*20, 2021*) (*18, 2021*) (*Aspen Network of Development Entrepreneurs, 2020*).

While the access divide with women is apparent throughout India, digital literacy and a lack of familiarity with digital platforms was a common thread during interviews with women-owned business. One woman business owner reported that even in urban areas “the education system doesn’t support technical training for women,” and suggested that women had to frequently teach themselves digital skills (*10, 2021*). With limited knowledge of digital tools and social media platforms, many women business owners struggle to move to online environments and had difficulties expanding their business or competing with other organizations (*Alam S., Digital Gap of Bihar and Jharkhand, 2021*).

Interviewees from small, women-owned businesses stated they do not have the same educational opportunities (K – 16) or access to environments for hands-on technology learning as men. During career counseling, several women business owners reported that counselors suggested that they pursue opportunities in domestic labor and deterred them from getting technical degrees or entering in the technical workforce. For that reason, women reported they are not encouraged to pursue digital training, especially in rural areas, and are discouraged from entering the technical fields and high-skill labor (*20, 2021*) (*10, 2021*). Thus, women remain both unaware and inhibited from entering high-tech sectors. These barriers result severely unequal outcomes for women. Just 13.8% of entrepreneurs in India are women and 20.4% of India’s MSMEs are women-owned (*Jain S., 2021*).

One of our interviewees, for example, is a woman

chief executive officer for a small, family-run organization, having recently succeeded her father. She reported company-wide complaints of a “female running a manufacturing organization” despite her qualifications, which include a Master of Business Administration and a decade of experience co-running the organization alongside her father. People within her organization openly expressed doubt in her abilities, and some even resigned due to her position in leadership. Many also questioned her ability to run a company and simultaneously fulfill household duties, such as raising children and being a wife (10, 2021). Examples such as this illustrate how compounding issues can impact Indian people’s access to technology, opportunity, and ability to run a successful business.

There are existing programs that target women for digital training and entrepreneurship training. However, women are viewed as a homogenous group, so the different needs of diverse women entrepreneurs, such as those of rural women or those of less educated women, can be glossed over (5, 2021) (Alam S. , *A Baseline Study on Digital Skills for Entrepreneurship and Livelihoods*, 2021). Women’s issues are thus overly generalized, and existing programs do not always address the various cultural and systemic barriers that women entrepreneurs face. Solutions to these systemic issues will necessarily be both broad, requiring cultural changes, and targeted, requiring interventions designed specifically to empower women and girls. Women’s current roles and opportunities within the MSME sector offer a stark picture on the magnitude of a missed economic opportunity in India. The single most impactful long-term investment in human capital and economic advancement in India centers on improving education, access to opportunities outside of domestic labor and family

businesses, and increasing digital literacy, access, and adoption among women. Overall, the disadvantages women face in India may in fact be the single biggest restraint on any country’s human capital, given that women in India alone would amount to the third-largest nation by population in the world.

Challenges with (Digital) Business Functionality

The pandemic created an opportunity for organizations to leverage digital technologies to support their business functionality.

Many micro and small business quickly realized that digital competency is essential to successful business operations and functionality. A recent survey conducted between June and August of 2021 reported that 67% of SMEs were online for business use and that SMEs were increasing their use of digital tools (DAI, 2021).

During this study, organizations reported that integrating digital technology into all areas of business would fundamentally change how the organization operated and would enable them to improve value delivery to their customers. For example, a FedEx survey recently reported that 44% of India’s small businesses use social media to communicate with

WOMEN’S ISSUES ARE OVERLY GENERALIZED, AND EXISTING PROGRAMS DO NOT ALWAYS ADDRESS THE VARIOUS CULTURAL AND SYSTEMIC BARRIERS THAT WOMEN ENTREPRENEURS FACE.

customers (*FedEx, 2020*). Correspondingly, a DAI study reported that 21% of SMEs use the Facebook app to communicate with customers (*DAI, 2021*). However, while digital integration increased, MSMEs continued to face digital operations challenges to include: 1) struggles to become formalized and maintain compliance regulations, 2) difficulties creating and maintaining effective and competitive marketing campaigns, and 3) issues maintaining digital financial records.

Formalization and Compliance According to previous reports and our interviews, the process of becoming a formal business and maintaining regulatory compliance is burdensome for SMEs. Previous research suggests that, while the Indian government has taken steps to reduce the regulatory burden it places on businesses, it is still too much for micro and small businesses to handle. Formalization leads to compliance and tax enforcement. This is where registering becomes problematic for many SMEs. If SMEs are formalized but not compliant with regulation, they can be fined and

face legal trouble. Thus, given the current incentive structure, many SMEs choose to remain operating informally to avoid red tape and the costs associated with formalization and compliance. As a result, MSMEs are unable to access benefits, which was supported in our interviews.

Continued simplification of the formalization and compliance process will benefit SMEs, as would expanding the reach of programs to areas that have historically not taken advantage of programs. Further, communicating the potential benefits of programs will help shift incentives towards registering

Marketing Expanding the digital footprint through social commerce has helped many SMEs expand their business, and a recent report from CRISIL, 47 percent of micro-enterprises and 53 percent of SMEs have adopted digital sales platforms in India (*CRISIL, 2020*). For the service sector, digital adoption increased the most significantly in the real estate and HR firms.

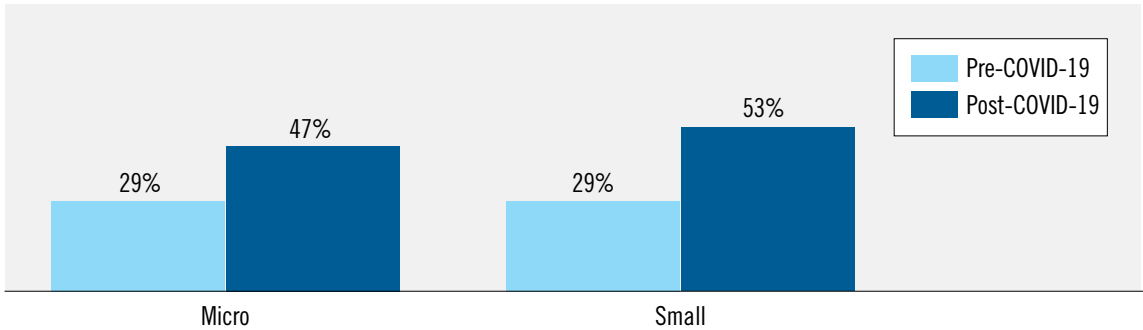


FIGURE 13. USE OF DIGITAL SELLING PLATFORMS BY SMALLER PLAYERS PRE- AND POST-COVID-19
(*CRISIL, 2020*). SMALLER ENTERPRISES IN BIG DIGITAL SHIFT TO SHORE UP SALES IN PANDEMIC TIMES. MUMBAI: S&P GLOBAL

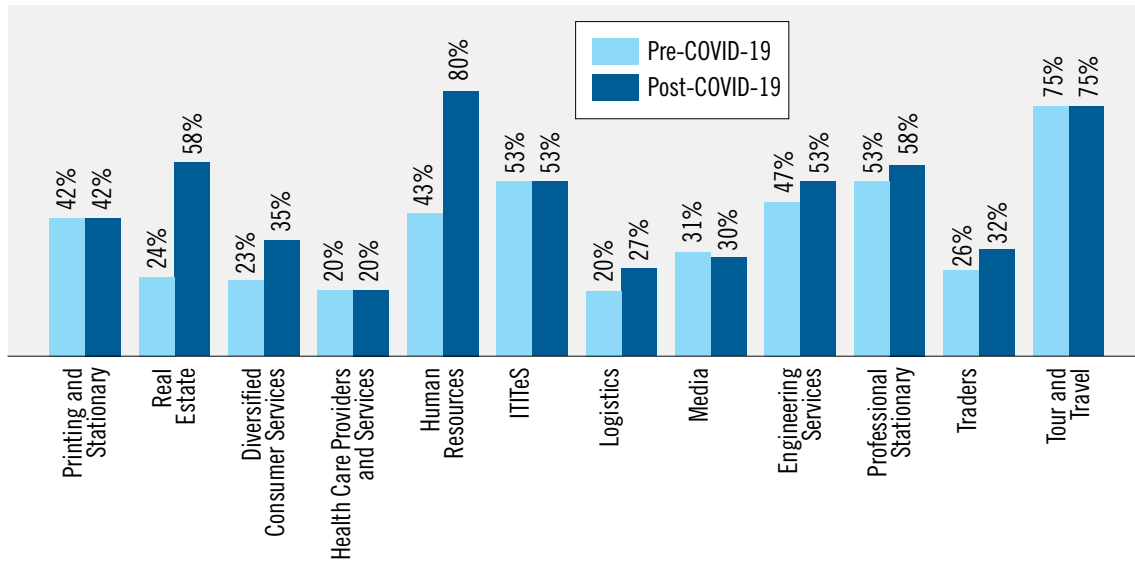


FIGURE 14. DIGITAL ADOPTION ACROSS INDUSTRIES PRE- AND POST-COVID-19
(CRISIL, 2020). SMALLER ENTERPRISES IN BIG DIGITAL SHIFT TO SHORE UP SALES IN PANDEMIC TIMES. MUMBAI: S&P GLOBAL

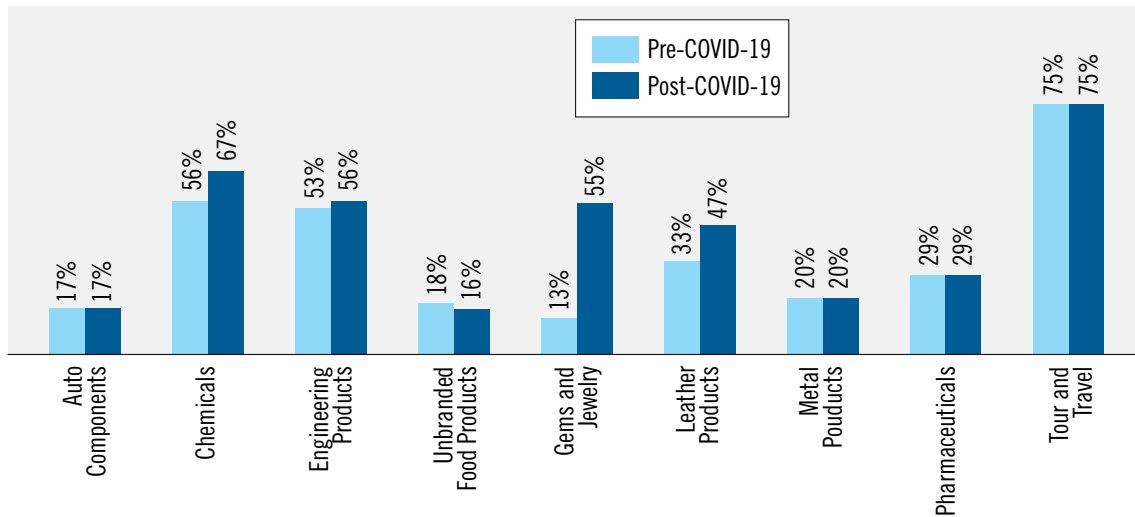


FIGURE 15. DIGITAL ONLINE PRESENCE PRE- AND POST-COVID-19
(CRISIL, 2020). SMALLER ENTERPRISES IN BIG DIGITAL SHIFT TO SHORE UP SALES IN PANDEMIC TIMES. MUMBAI: S&P GLOBAL

Manufacturing, gems and jewelry, and textile sectors increased the most in digital online presence when comparing pre-and post-Covid usage. While SMEs are expanding their online presence post-COVID-19, marketing challenges are a major theme of our interviews with SME employees and non-government organizations (NGOs). SMEs expressed interest in digital marketing (10, 2021) (32, 2021) (6, 2021) (23, 2021); however, in general, smaller organizations are unsure where to start. Interviewees within small enterprises stated many businesses lack knowledge of social media platforms that lend themselves to marketing—such as Amazon, Instagram, and WhatsApp—and struggle to compete with their peers or larger organizations. Organizations that were aware of marketing platforms used companies like Flipkart, India's first e-commerce company, and IndiaMart, which is India's largest B2B online marketplace for the distribution of goods and services. In addition, medium-size organizations mentioned leveraging niche marketplaces, including Myntra, an e-commerce marketplace specializing in home products and fashion.

As internet penetration continues to expand in India, the e-commerce market is expected to grow reaching \$200 billion by 2026 (*Buteau, 2021*). India's Brand Equity Foundation also forecasts that the e-commerce industry will hit \$99 billion by 2024, a growth of 27% CAGR between 2019-2024 (*Bora, 2021*). To exploit this growth, micro and small organizations will need to expand their capabilities, but many reported significant challenges. Small organizations expressed concerns because major e-commerce platforms required a Goods and Service Tax Identification Number, and many micro and small organizations reported not having their GST registration. As mentioned throughout the paper, proper bookkeeping

and accounting and financial review will also be required for GST, which will be discussed as core challenge in the next section of the paper.

Small organizations reported that operational efficiency challenges that lead to supply chain issues and delayed order fulfillment also prevent them from pursuing a large social media presence. In order to bolster their online presence, many small organizations reported needing to take steps to digitize their sales, bookkeeping, accounting (e.g., invoices), contracting, and inventory management (e.g., software, hardware, mobile devices, apps, and security tools). Additionally, interviewees discussed their inability to produce high quality marketing photos and videos that could expand their product's appeal to wider markets. Thus, while many SMEs would like to engage in digital marketing, small business owners are not sure how to initiate or maintain effective marketing campaigns.

With the correct training support, SMEs can increase their digital adoption, and build their confidence to appropriately integrate digital technology into their businesses. The Indian Government, particularly the Khadi and Village Industry Commission under the Ministry of MSME, is expanding various schemes to help build digital awareness, adoption, and integration into small businesses. However, it is recommended that the government expand to focus on the development of capabilities among micro-organizations due to their limited investments, lack of knowledge, and ability to adopt and integrate new digital technologies.

Another recommendation is for SMEs to have training in basic marketing fundamentals, such as how to approach email and social media, maintain an online presence, produce product descriptions, and operate cameras and other devices. Digital

modes can also provide affordable training for social media and marketing needs. Ideas42 is a non-profit organization that developed a scalable mobile-based training program targeted at micro and small business to increase consumers knowledge in marketing and financial management. Social media organizations like Amazon can help encourage micro and small businesses by providing free training in areas such as photo shoots, portfolio development, and online vendor management (10, 2021) (5, 2021) (39, 2022) (21, 2021).

Bookkeeping Financial record-keeping is another challenge that SME employees and NGOs commonly reference. This is an important barrier because financial records are often needed when SMEs access formal business processes, such as filing taxes or securing funding from a bank. Record-keeping and basic accounting are fundamental digital skills that can provide accurate accounting records, which are essential to a company's sustainability. Interviewees reported that effective bookkeeping offered practical business benefits to include budgeting, analysis to track cash flow, and future financial planning. Furthermore, integrating digital financial tools positively impacted SMEs by: 1) improved automation, financial processes, and overall operations; 2) provided the ability to quickly create data visualizations, which gave real-time financial information and assisted organizations with analyzing their overall strengths and weaknesses; and 3) accelerated the use data for decision making and providing more efficient business operations.

While SMEs understood the importance to incorporate digital tools in a business, many organizations we interviewed had varying levels of access and knowledge to digital bookkeeping technology for documenting financial information. In rural areas, several small organizations reported maintaining

financial records with pen and paper, but others reported using Google Sheets or QuickBooks, HR and accounting software (24, 2021). Thus, financial record-keeping methods vary among SMEs yet are a clear entry point for interventions to develop basic digital skills and encourage technology usage in other aspects of their business. Free and easily accessible training offered by government agencies, educational institutions, and/or commercial organizations to improve digital accounting and finance could significantly improve business operations, efficiencies, and growth.

Finance Attaining financing is a barrier that international organizations and NGOs have focused on in previous research. The literature reveals SMEs largely rely on informal lending sources, such as family and friends or other informal lenders, rather than on formal financial institutions. This phenomenon has several causes. The first is that SMEs tend to have poor financial records and little collateral, which financiers often require to ensure that loans are secure (20, 2021). This is a particularly difficult barrier for SMEs operating in service industries, as they typically do not have physical collateral, which was unlike manufacturing SMEs who have access to their physical collateral (*International Finance Corporation, 2018*). Banks also feel less comfortable lending to SMEs because consequences for defaulting on a loan are few, so businesses are not incentivized to prioritize loan repayment. This issue was compounded by the COVID-19 pandemic, which slowed business and precluded SMEs from repaying their loans (34, 2021).

Second, the inability to access sufficient formal financing is a main contributor to the “missing middle” phenomenon that India experiences. The “missing middle” is when small and medium enterprises lack access to financial services either because they are too large and cannot take advantage of micro-loans

or they are too small and cannot acquire traditional banking services. The “missing middle” interviewees identified lack of financing as a compounding issue that affects investment, workforce, and ability to use digital skills to scale operations. Overall, the small amount of financing available to micro and small enterprises allows for little growth (34, 2021). SMEs would benefit from a revised credit evaluation system that can consider factors other than financial records and collateral. Digital financing options may also make loans more accessible to SMEs, particularly those with the hardware and connectivity required to access the internet. Finally, training for financial record-keeping may also benefit SMEs in this sector, as missing financial records are a barrier to applying for and securing loans from traditional banks.

Third, and finally, the availability of traditional and non-traditional banking varies across India. In most urban areas, traditional brick-and-mortar banks are abundant, but this is not the case in rural areas. In areas without physical financial institutions, people must rely on mobile banking to secure loans from formal institutions; this poses a problem for people without digital access or awareness of digital financial tools and those who may have language barriers. Furthermore, our interviews with several micro-financial institutions supported literature review findings and stated that rural users often lack the technology and connectivity needed to conduct online financing. Another interviewee pointed out that even if they had access to phones and stable connectivity, lack of digital literacy limits SMEs’ ability to take advantage of digital financing (28, 2021). We should not assume that everyone has general awareness of digital banking or online financing options. Thus, government outreach, education programs, and development efforts should limit this knowledge gap in addition to encouraging adoption.

Challenges to Increasing Capacity with Digital Technologies

As digitalization penetrates more fully into the MSME sector, investing in a tightly integrated digital strategy will be the biggest differentiator between successful and unsuccessful companies. In addition, technological advancements have accelerated the widespread adoption of digital payments, which has had a positive impact on the efficiency and ability for payment transactions. However, limited digital penetration has some negative consequences as it has yet to reach all sects of society and the digital divide continues to impact payment coverages across rural areas of India. Last, security threats and adversary breaches that target SMEs are increasingly prevalent, impacting their ability to secure online payments.

Investment in Digital Strategy and Organizational Development

Many small organizations expressed challenges with their organizations’ digital strategy and lacked the ability to create an approach where digital technologies shaped the way they grew their current business. Small organizations reported that digital technology investment was not a priority and/or that the organization had limited resources to invest in digital improvements. Many organizations also stated they used outside consultants for technology support or digital marketing campaigns; they often did not have a business unit within the business that managed and/or coordinated digital initiatives for the company.

Digital Payments Before the pandemic, India’s government removed certain bills from circulation for monetary reasons, which resulted in the unintended consequence of an increasing reliance on digital payments. The pandemic also accelerated the transition

to digital payments, and a recent report found that 76% of small organizations and 60% of medium organizations had an uptick in digital payment, and 84% adopted internet banking since the pandemic started (*DAI, 2021*) (*FedEx, 2020*). As a result of this trend, many of the SMEs interviewed rely on digital payments and institutions such as National Payments Corporation of India (NPCI) are paving the way to support India's digital payment infrastructure. NPCI has been a game changer for mobile-based digital payments through their interoperable Unified Payments Interface, Account Aggregator model institutionalized by the Reserve Bank of India (RBI), and a new e-commerce innovation with Open Network for Digital Commerce. Despite the increase in these types of organizations, digital financing and payments continues to be a struggle for micro and small organizations in rural areas.

The improvements made by the digital financial ecosystem in India have created new challenges with the existing difficulties within the rural ecosystem, as many rural areas still tend to rely on cash. Interviewees suggested urban areas have fewer barriers and higher adoption rates of digital payments; they also estimated that 80% of individuals in rural areas still rely on cash. In another interview, a business owner mentioned that customers are hesitant when paying digitally because of digital privacy concerns (*39, 2022*). For both SME business owners and customers, adopting digital payments can jeopardize business functionality and customer service, especially in places with low levels of digital literacy (*28, 2021*). In addition, organizations reported lengthy delays in receiving digital payments, ranging from 30 – 60 days, resulting in ongoing financial barriers for smaller organizations. For the transition to digital payments to be successful, there must be widely available digital literacy training, better connectivity, ready access to devices (e.g., laptops

and mobile phones), and an improved financial infrastructure for more timely transactions.

Digital Security Digital security to include cybersecurity, data privacy, and digital fraud are increasing as more digital-forward ecosystems are launched. According to the 2018 India Risk Survey, top business concerns included phishing, hacktivism, and data theft (*Pinkerton and FICCI, 2018*). Many of the small organizations interviewed and who have adopted digital technologies as part of their workflows stated they are increasingly vulnerable to cyberattacks. In 2020, India reportedly had approximately 70,000 cyberattacks on citizen, commercial, and legal entities (*Pinkerton and FICCI, 2018*). Contributing factors include the proliferation of internet and mobile phones throughout India and the fact that SMEs remain largely unprepared for cyber intrusions (*CUTS International, 2021*).

Interviewees reported revenue loss from phishing and social engineering attacks on companies and subcontractors. Yet, when asked about the extent of their digital security, they mentioned having taken very basic security steps, or only those included in general software and hardware purchases. One organization said that their digital security measures include having separate physical storage for confidential documents, not allowing laptops to leave the factory, and limiting access to information by not sharing passwords. However, there were no explicit measures taken to protect them from cyberattacks (*24, 2021*). On the other hand, other informants spoke of the prevalence of unsafe security practices, such as sharing passwords, using weak passwords, and other vulnerabilities like being susceptible to scam messages (*16, 2021*) (*28, 2021*). Despite the immaturity of existing SME cybersecurity measures, many interviewees emphasized the desire to develop them. It is evident that SMEs already consider protecting sensitive

information with basic cybersecurity principles yet taking steps beyond basics requires increasing levels of cybersecurity literacy among enterprises.

Because cyberattacks are nondiscriminatory, widespread, and unexpected, it is essential to continue providing readily accessible cybersecurity training wrapped into other digital awareness training, ensuring a focus on ability to detect phishing/scam attempts. Phishing rates have increased drastically since the beginning of the pandemic. In 2020, approximately 75,000 phishing attempts were reported monthly; this number has more than doubled in 2021, with monthly phishing attempts averaging above 200,000 (APWG, 2021). On a baseline level, organizations will need to be prepared for data breaches and fraud. Organizations should have a basic digital protection framework and cybersecurity infrastructure set up. To test their security, running routine cybersecurity drills within SMEs would be beneficial (e.g., sending fake phishing emails to the organization as a training experience for employees). This is only one aspect of cybersecurity training and is not to overshadow other aspects of training, which are equally important (e.g., protection against ransomware, malware, etc.).

Challenges to Cultivating a Technology-Forward Culture

Cultivating a tech-forward culture is essential to SMEs. This means continually improving awareness

of technologies and their applications, having basic digital literacy and access to digital technologies, and hiring and retaining tech-savvy talent.

Digital Awareness SMEs generally lack awareness of digitization resources, including those programs offered by the government. A small enterprise interviewee stated their company does not enroll in government training programs because offerings change frequently, making it difficult to track which resources are available (16, 2021). Other interviewees echoed this sentiment, expressing a lack of knowledge of available government resources. SMEs owners and operators are also largely unaware of digital business applications (Alam S., *A Baseline Study on Digital Skills for Entrepreneurship and Livelihoods*, 2021) (Alam S., *Digital Gap of Bihar and Jharkhand*, 2021). Overall, SMEs are unaware of training opportunities, ineligible to participate, or they do not believe government-sponsored training is valuable. As such, the government should seek to connect all SMEs to available resources, improve training resources, and communicate the availability of such resources.

Access Barriers to acquiring hardware and limited connectivity prevent SMEs from adopting digital solutions. Rural areas in India are not afforded the same connectivity that urban areas are. Just 45 percent of internet subscribers are rural, even though rural residents comprise 65% of Indians (Telecom Regulatory Authority of India, 2020) (World Bank, 2020).

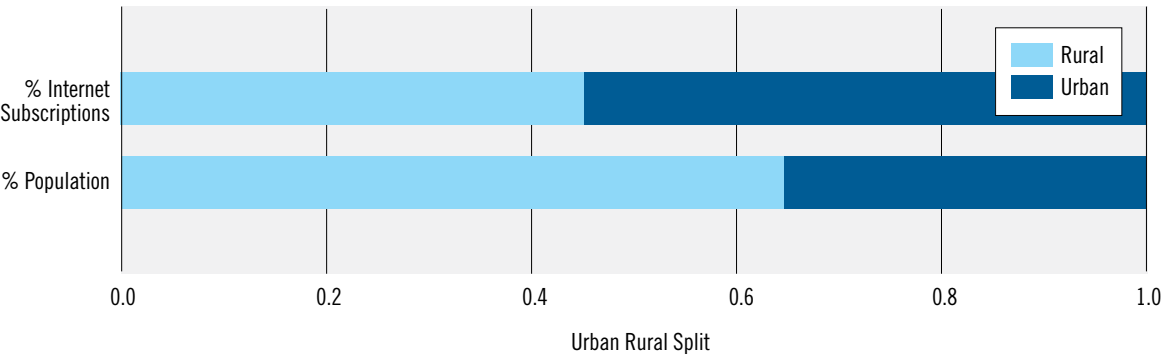


FIGURE 16. PERCENTAGE OF INTERNET SUBSCRIPTIONS IN URBAN AND RURAL INDIA
(TELECOM REGULATORY AUTHORITY OF INDIA, 2020)

This limits business opportunities in rural areas. One small manufacturing organization with more than 50 employees was forced to move production from a rural to an urban area due to insufficient digital infrastructure in the countryside (39, 2022). Overall, consistent electricity and connectivity issues also appear to be barriers for MSMEs across rural areas. Infrastructure limitations thus result in business limitations for rural companies (39, 2022) (40, 2022).

Acquiring hardware can be expensive and difficult (21, 2021) (Jha, 2020). Most farmers in India access the internet via phones; however, 79% of farmers who own phones do not have internet-friendly smartphones (Jha, 2020). Laptops are also difficult to acquire (24, 2021). Thus, both infrastructural and cost barriers prevent SMEs from adopting digital solutions. Accordingly, the soundest recommendation would be for government initiatives and any development organizations to continue expanding digital infrastructure.

Knowledge For SMEs in areas with good connectivity and access to hardware, the lack of awareness of digital applications prevents them from adopting

technical solutions. This sentiment was echoed frequently in our interviews, making digital literacy and education on business applications of technology fundamental areas for improvement. While many SME workers can use cell phones or computers to navigate the internet, most do not use these resources for business purposes (Alam S., A Baseline Study on Digital Skills for Entrepreneurship and Livelihoods, 2021) (Alam S., Digital Gap of Bihar and Jharkhand, 2021). Despite citing broad access to smartphones, our interviews highlighted the fact that many SMEs are not aware of business applications in general, nor of those with a prominent marketing impact such as Instagram, Facebook, and WhatsApp. This lack of awareness is part of what holds SMEs back from bridging the digital gap (5, 2021) (21, 2021) (27, 2021). Campaigns highlighting how SMEs with access to internet, cell phones, and laptops can leverage this technology can reduce digital barriers and promote business growth.

Gaps in digital literacy also prevent businesses from adopting digital solutions. Stereotypes preclude women and others from pursuing digital education

(5, 2021) (20, 2021). For those who lack access to technology, such as those in rural areas, digital literacy is also limited (20, 2021). Other knowledge gaps also contribute to low rates of digital adoption. For example, people with low literacy skills and people who rely exclusively on minority languages have a particularly difficult time acquiring digital skills since understanding English or Hindi is required to take advantage of the internet and personal technologies, which rarely offer local languages. For SMEs that lack a digitally literate workforce, it is often too expensive to hire digitally literate people to manage technology and its applications. Thus, many SMEs lack digitally literate workers and are thereby precluded from adopting digital business solutions, regardless of their knowledge of the benefits. General digital literacy training may be helpful for SMEs when combined with training for technologies for specific business applications, such as marketing or bookkeeping. An incentive program for digitally skilled people to seek and maintain employment with MSMEs may also help bridge the digital gap, enabling companies who lack digitally literate employees to take advantage of digital solutions.

Training and Upskilling Both insufficient training programs and lack of awareness of available training programs contribute to digital skill deficits for SMEs in India. In addition, SMEs must complete all the government-mandated processes for formalization and adhere to all compliance regulations, such as paying taxes in order to allow them to sign-up for any government sponsored workshops and/or training. Once they acquire access to a program, the results are often disappointing. Interviewees frequently reported that government training is outdated or does not apply to their current digital challenges. They state that training is overgeneralized and does not meet the

needs of businesses in different industries. MSMEs need customized trainings that fit their industry, which aligns with the successes of cluster development mentioned in the literature. Others agreed that different industries call for different technological applications, but these nuances are unrecognized. Interviewees also reported that many trainings are offered only in English, which excludes those in rural areas (5, 2021) (16, 2021) (21, 2021) (35, 2022). Other interviewees felt the amount of training offerings provided by both the national and state government agencies were overwhelming—they were not sure where to begin or what courses to take.

Many interviewees spoke of the digital literacy divide and discussed the widening of the gap within certain communities and demographics. During interviews, digital literacy was defined as, “the capabilities of an individual to use digital technologies,” “individuals who can operate technical hardware or software,” or “individuals who can use IT-related tools”. However, there was not a consistent definition of digital literacy across all organizations. Many used generalizations and discussed their own perceived gender and age biases when it came to digital competencies. For example, one interview stated that, “older people who conducted manual labor in the factory were not comfortable with modern technology,” and perceived the workers as difficult to train. This interviewee said that many did not know how to use the factory printer, and that they were often difficult to train and upskill (24, 2021). Another manufacturing organization stated that, while most of its employees lack digital skills, it was easier to train younger generations (<30 years old) on digital technology (39, 2022). The same company reported that training younger male generations took 4 months of training compared to their female or older-

peers at 8 – 10 months and attributed this to digital access and digital literacy divides (39, 2022). Several rural organizations discussed limited access to digital tools and the internet within their communities, which increased challenges with digital literacy. Magnifying this issue is the inability for some workers to read and comprehend digital materials in Hindi and/or English, making it challenging to learn digital products or use them. Thus, individuals with limited digital literacy or language fluency often struggled using tools such as the factory printer and laptops/computers; these people needed basic digital training skills.

Organizations felt strongly that training programs for digital upskilling or reskilling should be centered around learning initiatives and digital knowledge levels—particularly meeting students where they are in the learning continuum (Riegel & Mete, 2017). Furthermore, it is important to address the training curriculum with those that have grown up with technology (digital natives) and those who have not (digital immigrants). Research has found that each group ingests digital learning in different ways, and technology tools should be examined for types of learning modalities (Riegel & Mete, 2017).

One recommendation is to increase hands-on and experiential learning environments targeted at students in K – 12; vocational and university programs are viable ways for individuals to increase tech literacy and potentially build pathways for employment in MSMEs and/or for them to become entrepreneurs themselves. For those out of school, digital upskilling or reskilling programs are critical to have for employment. To foster an ecosystem that harnesses digital talent in the country, the National Association of Software and Service Companies (NASSCOM) developed the FutureSkills Prime in 2020, a platform supported under the Ministry of Electronics and Information

Technology (Dharmaraj, 2021). This program provides end-to-end portal for re-skilling and/or upskilling. A dynamically AI-enabled platform helps learners evaluate their digital skills and determines the best programs and pathways for career navigation and growth. In addition, the platform adjusts to the current needs of the market to include training in artificial intelligence (AI), the Internet of things, additive manufacturing, social and mobile, cybersecurity, etc., and provides free access to many of the awareness building modules. In 2022, a phased rollout began with additional modules on the platform, some hosted by industry-aligned paid certification courses, virtual labs, and virtual instructor led programs.

Debjani Ghosh, the President of NASSCOM, said, “FutureSkillsPRIME is yet another milestone for building digital talent as a competitive advantage for the industry. Reskilling and automation emerging as the future drivers of the industry, we aim to craft a new wave of growth and innovation through a digitally skilled pool of professionals.”

Creating real-time speech translations into the 21 official Indian languages can help overcome some of the language-related problems with digital literacy. In addition, evaluating effective user-engagement models such as graphical displays for instructions, replacing written displays, may address some aspects of the user’s digital journal, making it more seamless for instruction comprehension. Ultimately, national and state/local governments as well as commercial organizations will need to partner to solve language barrier problems with digital innovation.

An additional challenge within the training environment is training at the K – 12, vocational, and higher education institutions. Due to the constantly evolving structure of digital innovation, training is outdated

almost as soon as it is published, and most institutions in K – 16 offer theory-based training rather than applied approaches. The training that is provided by many college programs and degree programs is limited in its scope and does not prepare workers for the new digital technologies needed to support the growth of MSMEs (*Jain Y., 2020*). Professionals must gain additional knowledge from on-the-job training and event management as well as from ongoing learning and training that can be provided through a variety of courses. Unfortunately, to build a robust and effective workforce, the cost of training is very high.

Hiring and Keeping Technical Talent Our interviewees discussed difficulties procuring financing, which preclude businesses from acquiring technical talent. Technical talent is expensive, and training current employees also comes at a high cost. Finding, acquiring, and retaining talent are problems for MSMEs looking to utilize technical talent to grow (*16, 2021*) (*10, 2021*). The demand for digital skills is so high that employees often leave for better opportunities after a company invests in training them (*16, 2021*).

To hire talent, one recommendation is to create a system or portal of shared technical talent, which can provide a pool of technical professionals that act as consultants or subject matter experts working with multiple SMEs. In addition, the government or other interested stakeholders might be able to provide salary subsidies or tax incentives for using these technical professionals. Another potential solution is for organizations to partner with universities to recruit and develop talent with “digital natives.” Organizations can help shape the curriculum and develop the core capabilities needed through hands-on digital experiences. This would also provide early-career talent using a cost-effective approach.

To keep talent from going elsewhere, one of the best deterrents is building a team/company culture that employees genuinely embrace, making it harder for them to be lured away. It is also critical that organizations promote work-life balance, offer solid benefits, and create a collaborative atmosphere within the team that celebrates and rewards success. Another important factor in retention is employees’ sense of belonging and how they feel they are treated by the organization. Employees often do not consider leaving in the first year, and thus their early experience is critical to retention. The more employers understand their employees’ professional priorities, the more likely they are to attract and retain top talent.

CONCLUSIONS

India’s SME sector has proven its growth potential in recent years. The country can bolster this growth by increasing digital technology adoption and improving digital skills. Limited digital infrastructure in rural areas, which prevents rural SMEs from accessing resources and building digital skills, is a notable barrier to growth, adoption, and skill development. Cost barriers can also prevent SMEs from attaining internet connectivity, laptops, and cell phones. Bringing better digital infrastructure to rural areas and creating programs to reduce the cost of hardware and connectivity would help SMEs adopt digital solutions. SMEs that do have access to internet and hardware are not always aware of the applications technology can have for business. For these SMEs, campaigns highlighting the business applications of technology, specifically conducting digital marketing, operating digital bookkeeping tools, making digital payments, securing digital finance, and improving general digital literacy would be beneficial.

Further, providing cybersecurity training is imperative to protect businesses' sensitive data. These steps will help more MSMEs take advantage of digital solutions.

Women are largely discouraged from entrepreneurship and struggle to start and run SMEs. Women would benefit from digital literacy and skills programs that are both targeted to women and their SMEs' specific industries. Additionally, regulations imposed by both the government and banks prevent SMEs from accessing government services and financing. SMEs would correspondingly benefit from decreased government regulation as well as alternative methods of securing loans and assessing credit. Government and financing institutions should also use technology to reach SMEs in these challenge areas by creating portals that consolidate business regulations and standards and by making digital financing more accessible. These steps, in addition to steps promoting digitization, will help SMEs grow and thereby grow India's economy.

RECOMMENDATIONS

The following section provides an overview of the recommendations for the U.S. Department of State, United States Agency for International Development (USAID), and Indian government agencies to help close the gap and provide solutions to support SME growth and economic development.

Considering that more than 90% of all MSMEs in the country are micro enterprises, it could be very beneficial to the Indian government to increase its body of knowledge about people who own and operation micro enterprises; what poses barriers to their growth; what kinds of decisions, incentives, and disincentives they face regularly. By developing

the deeper understanding, the Indian government could get in a better position to formalize more micro enterprises. The results of this effort could be mutually beneficial as the government can increase its tax revenue, modernize its business environment through increased enforcement and compliance to regulations, and be better situated to shape its tax and businesses ecosystems around the realities of the economy. Likewise, SMEs will have broader access to existing government programs and their benefits. A secondary benefit of exiting the informal economy could be increased visibility to the government and, accordingly, increased leverage for advocating for and shaping the resources made available to the SME sector.

The second theme is the need to address the challenge that the informal economy poses to improving technological proliferation and improving digital skills. While India has lowered regulatory and tax burdens, many enterprises still fear the burdens that would be placed on them if they entered the formal economy. Compounding this issue is the fact that SMEs lack awareness of potential benefits, including access to programs that could grow and modernize their businesses using technology, that could be realized through registering their business.

The third major theme draws attention to the need for national, state, and local infrastructure support systems and the need to evaluate the ways in which electricity and digital infrastructure—particularly in rural areas—can expand to provide more Indians affordable connectivity.

The fourth theme of our recommendations relates to the empowerment of women in India. With more than 700 million Indian women, empowering this demographic is the single most impactful intervention

for the country overall. Further, considering the concentration of the country's employment to the SME sector and the generalization that women are largely employed in SMEs or domestic labor, empowering women in myriad ways will have direct positive impacts on the SME sector. Recommendations should expand existing programs to include and focus on improving digital and financial literacy and digital skills among women. The effects of potential interventions in these areas also rely on myriad cultural shifts in India that move the country away from discrimination against women and traditional gender roles.

The fifth theme identified is increasing SME access to finance. On the surface, finance and credit access are outside the scope of this report. However, the literature review and our qualitative interviews identified access to credit as an essential and immediate need of SMEs. Connecting this issue with the need for increased access to technology and digital skills provides a mutually beneficial solution: Fundamental digital skills in accounting, digital payments, and digital marketing can help SMEs secure financing because they are better able to provide transaction history and prove creditworthiness. In addition to developing technological areas such as digital finance and the speed of the transition to digital payments, pairing finance and digital skills can help SMEs circumnavigate issues with credit, collateral, and business statements to access larger sums of credit from more formal sources. Embracing these business applications of digital tools requires entry-level skills and can result in fast, positive impacts on the SME sector.

The sixth theme of our recommendations is to expand institutional capacity by improving education, training, and knowledge sharing across organizations. Educating the digital workforce through targeted K – 12,

vocation, and university programs and targeted upskilling certifications or on the job training can ensure the availability of a sufficiently skilled labor force. In addition, SMEs should build pathways to employment and provide hands-on experiences for students. Knowledge sharing between SMEs/entrepreneurs provides an environment to creatively collaborate and network to share techniques and ideas to bolster their organizations. We were startled to hear one interviewee reference the difficulty of training older workers on digital issues and suspect this is a common excuse used to focus on youth for digital upskilling (21, 2021). To be sure, young people should have access to digital literacy, but it would be imprudent to lose the productivity of a whole group of workers due to their age. Instead, the Indian government should ensure, much as it empowers women, that older adults are not left behind as it makes further strides for digitization. Since there is a plethora of training alternatives, effective marketing and communications campaigns will be needed across India, and targeted at specific demographics (e.g., rural vs. urban), with targeted solutions. For example, educating students in rural context will pose a wide variety of unique challenges compared to urban areas. One of the biggest challenges will be the physical distance between students, schools, and districts creating geographic isolation. Technology solutions can help mitigate these issues; however, access to the internet laptops/computers often poses a challenge in rural India as the infrastructure to support high-quality online implementation. Under the “E-Kranti” a major pillar of Digital India, the national government has partnered with commercial telecommunications providers to provide basic infrastructural set-up for internet services across rural parts of India.

As infrastructure support increases, teachers in rural areas can use digital tools such as smart-boards, LCD screens, and video which will allow teachers to deliver training remotely. This interactive digital media can also address the shortage of teachers in rural areas, and through its novelty potentially increasing student interest and encouraging them to attend school regularly due to the novelty of the technology. NGOs are already targeting this approach, such as Pratham and Vodafone Foundation India has started “Learn, Out of the Box” a digital classroom initiative which provides digital technology to teachers and learners in low-income areas; and e-Vidyaloka whose mission is to increase the quality of education in rural regions through digital classrooms. While these efforts impact digital education in rural parts of India, large scale initiatives can deliver greater impact. A recommended step is to coordinate national/state government agencies, non-governmental organizations (NGOs), and Corporate Social Responsibility organizations to provide large-scale initiatives such as access to digital tools, infrastructure advancement, and free training for teachers and parents on tools and e-learning

approaches to alleviate their apprehension of new modes of teaching.

Entities like State and USAID can continue to improve education, skills, and opportunities for Indians through public diplomacy programming and leveraging expertise in development program design. These efforts can include State officials using connections with U.S.-based technology firms operating in India to spread networks, trainings, and opportunities to MSMEs through the private sector. Public diplomacy programming can aim to improve digital skills, entrepreneurship, and opportunities for women.

Other American institutions, such as the U.S. International Development Finance Corporation, can lend expertise to the government of India to help address issues identified in this paper, such as expanding the network of industrial or technical hubs throughout the country and expanding digital infrastructure—all with specific emphasis on addressing the needs of MSMEs in rural areas. In these ways, U.S. entities can help by leveraging relationships and skills to build capacity and connect MSMEs.

TABLE 8. RECOMMENDATIONS – INDIA

#	Challenge Area	Recommendations for State/USAID	Recommendations for Indian Government
1	Governance/Awareness	Help increase MSME awareness of relevant policies and legislation.	Improve information and understanding of micro enterprises' needs, digital connectivity, and skills considering their magnitude within the MSME sector. Create a dedicated agency at the national and state levels focused on micro enterprises.
2	Governance/Digital Literacy	Help create or expand existing digital literacy framework to be more inclusive of marginalized demographic groups such as rural, women, older, and illiterate people while ensuring that all digital literacy education includes an emphasis on cybersecurity.	Expand the national definition of digital literacy to include cybersecurity. Evaluate national, state, and local definitions of digital literacy to include cybersecurity and coordinate a single approach across the nation. Create a national, state and local digital literacy policy and monitor / evaluate digital literacy. Collect national, state and local data on digital literacy to measure and determine effective programs targeted at specific populations.
3	Access	Create an easy-to-use platform to share knowledge of emerging technologies for extending internet connectivity and digital access in low-access areas.	Conduct a situational assessment of state/local physical infrastructure needs and digital penetration (e.g., smart phone penetration and internet usage). Specifically, evaluate the inadequacies in infrastructure in rural regions to include electricity, mobile towers, and broadband usage and reliance for business use. Invest in expanding access to high-speed internet connectivity, and/or providing subsidies for micro/small organizations for internet access. Bridge the urban-rural digital divide by providing high-speed broadband connectivity to every village.
4	Access/Digital Literacy	Connect the Indian government with program evaluation tools. Provide a framework for evaluating the quality and functionality of technological systems in states and regions. Evaluate the cultural, educational and workforce impacts of increased technology usage in marginalized communities (e.g., low-income or rural areas). Determine ways to better monitor and evaluate (M&E) digital literacy across populations. Based on further assessments at the state /local levels create or leverage current piloted programs to bolster technology awareness, adoption and integration in these communities.	Evaluate technology, digital access, digital readiness, requirements, and knowledge within states and regions by sectors to determine deeper challenges and potential solutions. Evaluate state/local digitization endeavors, to include: integration of digital ecosystems to build connections, transformation, creation of entrepreneur identification systems, access to markets, delivery, and use of government schemes.
5	Awareness/Technology	Work in collaboration with the government, industry, academia to evaluate and address reasons behind distrust in technology and/or technology adoption.	Work with stakeholders to find new ways to promote technology adoption. In partnership with national-government agencies, state/local agencies should devise various schemes to build awareness among small businesses about the benefits of technology and to support digital adoption and eventual integration into their operations.

TABLE 8. RECOMMENDATIONS – INDIA (continued)

6	Awareness/ Technology	Provide recommendations on affordable technologies/applications SMEs could incorporate into their businesses.	Create a portal that allows SME users to ID and review tech/apps based on their sector/use.
7	Access/ Awareness/ Finance	Promote the business applications of technology, such as digital bookkeeping.	Provide free access to and training on basic accounting systems for SMEs. Provide SME access to government micro-finance programs that support e-commerce. Create government assistance programs that improve the flow of capital and credit at a reduced financial cost/risk to the SME. Increase the role of fintechs catering to micro and small business to increase the availability of digital credit. Develop solutions to address the perennial problem of delayed payments. Provide SME access or use of e-commerce applications for daily business transactions. Expand and accelerate the Government e-marketplace (GeM) to provide easy administrative onboarding and support to increase the numbers of MSMEs selling on the portal especially those from diverse social groups (e.g., women)
8	Governance/ Finance	Share knowledge of emerging technologies for extending internet connectivity and digital access in low-access areas.	Conduct a detailed assessment on Distributed Ledger Technologies (DLT) or blockchain to determine if it will positively impact MSME expansion. If appropriate, determine a national and state vision, strategy, agenda and action plan to promote adoption of blockchain based on the needs of exports, infrastructure, and domestic value chains.
9	Awareness/ Governance/ Formalization	Market/promote knowledge of tax and other reforms as well as program benefits associated with eligibility.	Develop a one-stop portal for SMEs that provides information such as: policies impacting SMEs (and changes occurring) and explanations of the statutory requirements to start, operate, and formalize an enterprise. Create a Goods and Service Tax (GST) portal integrating with the Trade receivables Discounting System (TReDS) increasing the use of digitalization and assisting with the ease of formalization. Expand accessibility and promote registration for a UAM, providing non-compliant MSMEs a grace period to obtain the benefits of training while achieving compliance. Create clear pathways for micro and small enterprises to become formalized. Address informal MSMEs incentives to remain in the shadow economy and excluded from robust programs and benefits that can aid their growth and modernization.

TABLE 8. RECOMMENDATIONS – INDIA *(continued)*

10	Awareness/ Marketing	Work with government and business organizations (i.e., chambers of commerce) develop and promote programs that relay basic marketing/product promotion skills. Focus on product promotion activities and improving communications instead of more advanced marketing skills, such as accessing global markets.	Develop an e-commerce portal with government-supported logistics providing national and international market access to the traditional artisans of the state. Provide training for SME utilization of social media or social messaging platforms to market, advertise, and conduct business
11	Education/ Digital Literacy/ Gender Gap	Support community-led digital literacy, cybersecurity, and digital financial inclusion programs targeted at women.	Increase access to mobile devices for women (e.g., by providing free mobile devices or tablets to girls in K – 12). Offer free or affordable smartphones for women through corporate social responsibility programs and government schemes. Offer digital literacy programs for women/girls. Increase digital training courses for women entrepreneurs on digital marketing and digital payments.
12	Education/ Awareness	Vet technologies and provide instructions on how they are to be used to address the education gap. Share success stories that are culturally/demographically relevant.	Increase the awareness of the MSME Sampark portal, a marketplace for matching MSME employers with skilled graduates. Create a national and state / local portal for MSME to hire currently enrolled university students providing them with hands-on training during internships, capstones, senior projects or Graduate Research Assistantships (GRAs).
13	Education/ Awareness/ Gender Gap	Develop embassy/consulate public affairs programs focusing on women and girls in tech programs. Utilize experience with intervention and program targeting to help the Government of India alleviate issues identified in our study relating to training programs; they need to be in person, consistent, consolidated/streamlined, in local languages, etc.).	Establish a unifying campaign promoting the inclusion of women, rural inhabitants, and youth and emphasizing the increasing impact they can have in technology. Provide skilling initiatives (through vocational training) to be undertaken on a large scale to re-train the existing workforce (which will be forced to migrate from agriculture into other sectors) or those who are un/under-employed in urban areas. Create initiatives to upgrade existing Industrial Training Institutes and establish new ones. Create close networking with the industry for immediate placement of the trainees. Create a Centre for Excellence for standardization of the training curriculum, training of trainers, etc.
14	Education	Develop both in-person and online options for training in languages that are accessible to the local populations. Embassy supports hackathons, entrepreneur incubators, pitch development programs	Partner with various training institutes to impart basic IT skills and provide courses on sales, customer service, desktop publishing, computer networking, web designing, security, technology, and other topics. Provide relevant and up-to-date courses that can help SMEs grow. Reward MSMEs for initiatives toward skill development and employment generation—particularly for women and special classes—by way of direct incentives, weighted deductions and reliefs in indirect taxes combined with low-cost funding and credit access for stakeholders.

TABLE 8. RECOMMENDATIONS – INDIA *(continued)*

15	Education/ Partnerships	Facilitate the collaboration of U.S.-based firms in India, particularly tech firms, key India sectors/ educational audiences to build skills..	Organize skill development programs with the National Skill Development Corporation and the Entrepreneurship Development Program/Entrepreneurship and Skill Development Program. Adopt cluster and mega-cluster development strategies to focus on skill development and capacity building, technology support, and support for financial and market linkage at the sector level. Partner with the private sector to set up industrial parks with active government support to provide space for SMEs to work in collaborative environments, share knowledge, and grow in technical competencies.
16	Awareness	Leverage embassy/consulate staff to connect U.S. firms to help address specific need areas: rural/ female tech access, skills. Work with government, industry, academia to develop collaborative spaces for MSMEs/ entrepreneurs to network and share best practices.	Set up a collaboration center in each state to act as a networking hub for technology providers and technology seekers. This will be aimed at supporting and sustaining technology ecosystems for SME sectors by leveraging the expertise of universities and R&D institutions. Provide incentives to universities and institutions to create regional Economic Development Centers, support SMEs for capacity building, and provide support.
17	Access/ Awareness/ Rural	Create cluster digital development programs for one-industry/one-product rural areas.	Create Rural Industrial Program(s) to provide a cohesive and integrated package of basic ways to develop SMEs by creating training programs.
18	Awareness/ Digital Literacy/ Gender Gap	Increase awareness of MSME opportunities for women and create programs to destigmatize the thought of women in business.	Expand rural industrial program(s) to include and focus on improving digital and financial literacy and digital skills among women. Provide tax incentives and subsidies to increase the number of women in the MSME ecosystem.
19	National/ State/Finance	Share best practices on blockchain with the government of India.	Conduct a detailed assessment on blockchain to determine if it will positively impact MSME expansion. If appropriate, determine a national and state vision, strategy, agenda and action plan to promote adoption of blockchain based on the needs of exports, infrastructure, and domestic value chains.

Conclusion

There is no doubt that multiple people, organizations, and agencies work with the nations of Bangladesh, India, Nepal, and Sri Lanka to assist them in supporting digitization of their SMEs as well as upskilling of SME owners and operators.

Over the past two decades, all of these forces joined together to make impressive progress, however, much more progress remains on the horizon. In the next 12-24 months, State and USAID can join forces to work more closely together than ever before in a concerted effort to ensure that digital security is wrapped into SME policy, outreach, and upskilling efforts. As millions of SMEs begin to accept digitization and rely more on digital tools such as digital payments and

accounting software, it would be tragic if they started to experience large-scale fraud and theft, which could wipe away their newfound if tentative trust in all things digital in an instant. The digital successes of these entrepreneurs will surely yield more digital successes, but digital failures could yield a hasty digital retreat that SMEs and the GDPs of their nations would take years to recover from. Indeed, an emphasis on the following will pave the way for longer term gains, boosting the productivity of SMEs and therein overall GDP:

1. Stronger intergovernmental collaboration
2. National awareness campaigns
3. Outreach and targeted education for marginalized groups
4. Investment in infrastructure and digital security
5. Public/private partnership

APPENDICES



Appendix A: Interviewees

BANGLADESH	
1	• Date: 2/15/2022 • Interviewer: Jeremiah Harvey • Size (micro, small, or medium): Medium • Industry/sector: Handicraft retail
2	• Date: 2/8/2022 • Interviewer: Jeremiah Harvey • Size (micro, small, or medium): NGO • Industry/sector: Social Development Program
3	• Date: Not Provided • Interviewer: Jeremiah Harvey • Size (micro, small, or medium): Medium • Industry/sector: Destination Management
INDIA	
4	• Date: 10/11/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: supporting growth of small businesses
5	• Date: 11/10/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: social enterprise measures impact of women, social and green initiatives
6	• Date: 11/10/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: Chamber
7	• Date: 11/16/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Large business supports growth of MSMEs • Industry/sector: organization to develop entrepreneurs
8	• Date: 11/18/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: corporate gifting and promotional merchandise services
9	• Date: 11/18/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: seaweed, chemical, and electrical MSME
10	• Date: 11/19/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Indian-based global relocation
11	• Date: 11/19/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: American Chamber
12	• Date: 11/22/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: India Chamber, Regional-based

13	• Date: 11/22/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: India Chamber, Regional-based
14	• Date: 11/22/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: India Chamber, National-based
15	• Date: 11/23/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: finance
16	• Date: 11/23/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: paper manufacturing
17	• Date: 11/29/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: entertainment, tourism, tea, MSME
18	• Date: 12/01/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Global Alliance for Mass Entrepreneurship
19	• Date: 12/02/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Global sustainability
20	• Date: 12/07/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Online digital platform for story telling
21	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Venture Capital supporting micro and small organizations
22	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Large • Industry/sector: Organization to develop entrepreneurs
23	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Large • Industry/sector: University Department focuses on MSME growth
24	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Seaweed

25	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Large • Industry/sector: Large Consulting Firm
26	• Date: 12/08/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Investments
27	• Date: 12/09/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Digital Foundation
28	• Date: 12/09/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Finance
29	• Date: 12/09/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Supporting growth of small businesses
30	• Date: 12/14/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Talent Search Agency
31	• Date: 12/14/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Research organization
32	• Date: 12/14/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Large • Industry/sector: Large Consulting Firm
33	• Date: 12/14/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Government Agency • Industry/sector: National Government
34	• Date: 12/15/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Finance
35	• Date: 01/03/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Travel Agency
36	• Date: 01/05/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Consortium of MSMEs

37	• Date: 01/10/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Impact investment platform for Indian business leaders and non-profits to share best practices
38	• Date: 01/10/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Bank / Finance
39	• Date: 01/11/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Wallet Making
40	• Date: 01/11/2022 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Outsourcing organization
41	• Date: 11/12/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Manufacturers Including Scientific and Surgical Appliances
42	• Date: 11/13/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Manufacturers Including Scientific and Surgical Appliances
43	• Date: 11/13/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Manufacturers Including Scientific and Surgical Appliances
44	• Date: 11/13/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Manufacturers Including Scientific and Surgical Appliances
45	• Date: 12/04/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Cold Storage and Food Processing
46	• Date: 12/09/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Hotels, Restaurants, Tour Operators, Handicrafts, Carpets, and Dhurries
47	• Date: 12/09/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Hotels, Restaurants, Tour Operators, Handicrafts, Carpets, and Dhurries
48	• Date: 12/12/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Medium • Industry/sector: Hotels, Restaurants, Tour Operators, Handicrafts, Carpets, and Dhurries

49	• Date: 12/12/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Hotels, Restaurants, Tour Operators, Handicrafts, Carpets, and Dhurries
50	• Date: 12/14/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Small • Industry/sector: Online GST Billing Software
51	• Date: 11/29/2021 • Interviewer: Liv Blackmon • Size (micro, small, or medium): Chamber • Industry/sector: National Chamber
NEPAL	
52	• Date: 10/29/2021 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Small • Industry/sector: Private Entrepreneurship Training / Incubator Company
53	• Date: 11/9/2021 • Interviewer: Jennifer Heath • Size (micro, small, or medium): None • Industry/sector: SME Business Membership Organization
54	• Date: 12/9/21 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Medium • Industry/sector: Financial Tech Company
55	• Date: 12/21/2021 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Small • Industry/sector: Garments Business Association
56	• Date: 1/13/2022 • Interviewer: Emily Allen • Size (micro, small, or medium): Small • Industry/sector: Tourism Private Company
57	• Date: 1/19/2022 • Interviewer: Jennifer Heath • Size (micro, small, or medium): None • Industry/sector: Not-for-profit policy and research institution
58	• Date: 1/20/22 • Interviewer: Emily Allen • Size (micro, small, or medium): Medium • Industry/sector: Software Company
59	• Date: 1/21/2022 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Micro to Medium • Industry/sector: Women's Business Membership Organization
60	• Date: 1/24/2022 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Small to Medium • Industry/sector: Investment Information and Credit Rating Agency

61	• Date: 1/26/2022 • Interviewer: Emily Allen • Size (micro, small, or medium): Micro to Medium • Industry/sector: Carpet Business Association
62	• Date: 1/27/22 • Interviewer: Emily Allen • Size (micro, small, or medium): Government Agency • Industry/sector: Government Agency
63	• Date: 2/3/22 • Interviewer: Jennifer Heath • Size (micro, small, or medium): Government Agency • Industry/sector: Government Agency
SRI LANKA	
64	• Date: October 25, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Government – Technology
65	• Date: October 26, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Banking
66	• Date: November 2, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Government – Development
67	• Date: November 3, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Chamber of Commerce
68	• Date: November 4, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Government – Development
69	• Date: November 5, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Consultant – Aid Organization
70	• Date: November 9, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Chamber of Commerce
71	• Date: November 19, 2021 • Interviewer: Travis Williams • Size: Small (also Business Association) • Industry/sector: Automotive

72	• Date: December 6, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Business Association – Technology
73	• Date: December 6, 2021 • Interviewer: Travis Williams • Size: N/A • Industry/sector: Business Association
74	• Date: December 7, 2021 • Interviewer: Travis Williams • Size: Small • Industry/sector: Tourism
75	• Date: December 9, 2021 • Interviewer: Travis Williams • Size: Small • Industry/sector: Tourism and Processed Food
76	• Date: December 10, 2021 • Interviewer: Travis Williams • Size: Small • Industry/sector: Food and Personal Care
77	• Date: December 14, 2021 • Interviewer: Travis Williams • Size: Small • Industry/sector: Chamber of Commerce
78	• Date: January 6, 2022 • Interviewer: Travis Williams • Size: Small • Industry/sector: Food and Spice
79	• Date: January 26, 2022 • Interviewer: Travis Williams • Size: Small • Industry/sector: Traditional Clothing
80	• Date: January 27, 2022 • Interviewer: Travis Williams • Size: Small • Industry/sector: Agriculture and Tourism
81	• Date: February 2, 2022 • Interviewer: Travis Williams • Size: Small • Industry/sector: Herbals

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The authors are:

Emily Allen

Dr. Laurence Audenaerd

Dr. Liv Blackmon

Theresa Dillon

Jennifer Heath

Amanda Hardy

Cody Johnson

Isaiah Murray

Travis Williams

Chris Zimmer

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