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Digital Literacy of Rural Households  
in Bangladesh

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Iffat Zahan, and Maria Matin

**DIGITIZATION SERIES**

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# 1. Introduction

Digitization is changing the way people around the world learn, live, work, and communicate. As more and more public and private sector services are being digitized to make them more accessible to citizens, digital literacy is becoming an increasingly essential skill needed to reap the fullest benefits from these services. Without people possessing the necessary digital competency, the benefits of information and communication technology (ICT)-driven public initiatives will not reach out to all the people of a country. The same holds true for Bangladesh, which aspires to become a fully digitized nation.

## 1.1. Study Context

In recent years, most countries around the world have started to use e-governance, a process in which through the use of ICT, government services are made available to the public. It allows governments to achieve development goals and ensure better quality services delivered through better service delivery systems while ensuring efficiency, transparency, accountability, and responsiveness of the public sectors. It also provides citizens with the opportunity to participate in democratic institutions and processes (Mahajan, 2015).

The Government of Bangladesh (GoB) places a high priority on creating a decentralized, accessible, and efficient public e-service delivery system. In 2009, the government introduced Digital Bangladesh Priorities in which one of the priorities was to take services to citizens' doorsteps. This created the need to digitize public service delivery at the lowest tier of government. Targets were set in a "Perspective Plan (2010-2021)" which promised that "telecentres/community e-centres with internet facilities in unions will reach 50 per cent by 2015, and 100 per cent by 2020" (GED, 2012). Over the years, GoB has made commendable progress in delivering digital public services efficiently among the poor and marginalized populations of the nation, which contributed to its success in achieving a decent e-governance system. In its "United Nations E-Government Survey 2018", the United Nations Department of Economic and Social Affairs (UNDESA) ranked Bangladesh top among the least developed countries (LDCs) and 115th globally in expanding e-governance activities (United Nations, 2018). Evidence for progress is also visible in the Seventh Five Year Plan: FY 2016- 2020 of the

Bangladesh Government, according to which, the most vital government services have been made available at all Digital Centres through the national portal and over mobile devices. Moreover, it states that 100% of the nation's citizens and residents have a digital identification document (ID) that is used in service delivery (GED, 2015).

Although GoB has been successful in adopting e-governance by digitizing numerous public services, there persists a significant "digital divide", particularly in rural Bangladesh (Waughen, 2015) which continues to hinder citizens' uptake of public e-services. This persisting digital divide is a new source of inequality in which certain factions of the community, such as low-income families and rural residents, fall behind in the adoption and use of ICT (US-DoC, 2011). Factors such as differences in access, affordability, age, bandwidth, content, disability, education, gender, migration, location, mobile speed, etc. contribute to the digital divide (UNDP, 2015). According to Romke (2013), the digital divide in Bangladesh has many facets; the divide exists between urban and rural areas, between the different income stratum, and between the literate and the illiterate people. The author predicted that with time, citizens are at risk of being marginalized by not only access to ICT but also by the capability to use such information technologies. Rural and suburban areas in Bangladesh lag behind in terms of access to internet facilities and reliable power supply which create hindrance in the way of developing telecom infrastructure (Rahman, 2008).

A way to reduce the digital divide is to improve citizens' "skills" or "know-how" of using information technology, termed as "digital literacy". According to the Economist Intelligence Unit (2012), improving the skills to use online services of the whole population of a country is crucial in bridging the digital divide and should be one of the main priorities of the policymakers. Moreover, digital literacy is listed as one of the key components in the Sustainable Development Goals (SDGs), where Target 4.4 aims to "increase the share of youth and adults with relevant technical and vocational skills for decent jobs." Under Goal 4, Indicator 4.4.2 requires countries to track "the percentage of youth and adults who have achieved at least a minimum level of proficiency in digital literacy."

The digital literacy level of citizens as well as administrative workers can affect the development of e-governance (Tomaszewicz, 2015). A low level of digital literacy in rural areas (a demand-side problem) is likely to significantly reduce the consumption of public e-services. The

manual/traditional alternatives to public e-services are relatively more costly and time-consuming. This may also lead to public dissatisfaction and mistrust about the government and its activities. A higher level of e-service consumption requires information and knowledge about public e-services. Given that the vast population of Bangladesh reside in rural areas, examining the existing knowledge base of rural households regarding the availability, usefulness, and procedure of public e-services is of critical importance. A related (supply-side) question is how well the information is disseminated and campaigned in rural Bangladesh.

Keeping all of the above in consideration, BRAC Institute of Governance and Development (BIGD) has conducted the “Digital Literacy and Access to Public Services” survey. The results of this survey will be published in two parts: the first report, which is this one, will cover the survey findings on digital literacy. The second report will discuss the findings on public e-services.

## 1.2. Motivation

Till now there has been no comprehensive research on digital literacy which studies a population, such as the rural households in Bangladesh, where access and exposure to ICT are very low. Moreover, prior to this one, no survey has been conducted in Bangladesh to obtain detail and systematic data about the key attributes, namely household-level digital literacy, household’s social status and networks, household’s consumption and experience of various public e-services, difficulty level of public e-services, etc. The measures of digital literacy available at present, therefore, are not suitable for such a context with low access and low exposure. It is expected that the measure of digital literacy developed in this report will be the first of its kind to address this gap in the literature for a systematic study on digital literacy which will inform and guide further improvement in digital service uptake.

## 1.3. Research Objective

The objective of this research is to a) explore the current state of digital literacy in rural Bangladesh, b) investigate the determinants of digital literacy, and c) develop the first-ever digital literacy index (DLI) for Bangladesh, which we named “DLit\_BIGD 1.0”.



In meeting such objectives, this report will shed light on the following research questions:

1. What is the state of digital literacy in a rural setting with poor access and exposure?
2. Is there any geographical heterogeneity in key indicators and variables?
3. Is there any gender gap in key indicators and variables?
4. How are demographic factors (e.g. education, age, occupation, income level, etc.) related to digital literacy?

## 1.4. Report Structure

The rest of the paper is organized as follows: Chapter 2 discusses the methodology for the study. Chapter 3 presents descriptive findings from the survey, followed by Chapter 4 which develops the conceptual framework for digital literacy and Chapter 5 which provides results on the DLI. Finally, Chapter 6 concludes the paper by highlighting the key findings.

## 2. Methodology

### 2.1. Context

Conducted by the BRAC Institute of Governance and Development (BIGD) in between September and November 2019, “Digital Literacy and Access to Public Services” survey is the first of its kind to interview 6,500 rural households all across Bangladesh. As the title suggests, a part of the survey covers digital literacy, under which the survey collected detailed information on the use of and access to information and communications technology (ICT) and also on the nature and competency level of such usages; the other part gathers information on access and usage of 46 digital public services.<sup>1</sup> The survey questionnaire was developed through several tool tests between May and August 2019. A hundred enumerators were trained to conduct this survey and were assigned the roles of field enumerators, team leaders, and back-checkers. They used the data collection software SurveyCTO to conduct the interviews with the help of electronic tablets. The average duration for each interview was two hours.

### 2.2. Survey Design

“Digital Literacy and Access to Public Services” is a cross-sectional household survey<sup>2</sup> of rural households in Bangladesh. To measure the digital literacy and access to public services at the household level, the survey took a different approach from conventional survey methods. The survey interviews were conducted in each household following a mini focus group discussion (FGD) style.

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<sup>1</sup> These services were selected from the e-portal by the Government of Bangladesh (<https://services.portal.gov.bd/>) which lists more than 600 e-services of various government organizations. After consulting with Access to Information (a2i), it was decided to exclude services related to information provision and internal administration. This narrowed down the list to 46 e-services.

<sup>2</sup> “A cross-sectional survey collects data to make inferences about a population of interest (universe) at one point in time. Cross-sectional surveys have been described as snapshots of the populations about which they gather data.” —Encyclopedia of Survey Research Methods, SAGE

In most surveys, the household head is usually the main respondent in an interview. But if we try to understand digital literacy and access to public services, this approach becomes problematic. For one thing, household heads are not necessarily the most digitally able person in a household and therefore, interviewing them about digital literacy would give an inaccurate measure of the overall digital literacy of the household. And for another, different household members might access different public services, meaning that it is not always the household head who will know the detailed information about all the services. In our pilot test, for example, we found that mothers often take responsibility for getting birth certificates for their children, while fathers are responsible for services such as getting passports issued. School-going children of the household, on the other hand, are more informed about how to get their examination results online. The adopted solution to these issues was to have all household members present during the survey and let them identify the most digitally able person<sup>3</sup> (MDAP) in their household, who would then answer the questions on digital literacy. In this way, the household-level digital literacy corresponds to the highest level of individual digital literacy available to that particular household. Again, having all members present when the services are mentioned allows all members to provide input on the services they are familiar with and thus the interview took the form of a mini FGD. Although this method required more time than the usual single-respondent surveys, it was necessary for ensuring that we got more accurate information on digital literacy and usage of digital services.

### 2.3. Sampling

The survey sampling was designed to be nationally representative of rural Bangladesh. Simultaneously, it was also representative of rural areas of each of the eight administrative divisions of the country (i.e. Barisal, Chattogram, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, and Sylhet), where each division represented one stratum. The sample size for each division or stratum was estimated to be 806.4 households, i.e. 6,451 households across the eight divisions (for detailed calculations, see Annexe A1). To round up, the total survey size was then set at 6,500 households.

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<sup>3</sup> The most digitally able person (MDAP) was described as someone who is apt in mobile/ computer/ internet. If the household did not have such a person, the household head would answer the section.

The sampling frame used for this survey to select the list of Primary Sampling Units (PSUs)<sup>4</sup> was based on the Integrated Multi-Purpose Sample (IMPS) designed by the Bangladesh Bureau of Statistics (BBS). The IMPS has 1,077 PSUs in rural areas and 935 in urban. For this survey, it was decided to allot 20 households from each PSU, i.e.  $6,500/20=325$  PSUs. Since the study focuses on rural households, the 325 PSUs were taken from rural areas only.

Stratified random sampling technique was used to select these 325 PSUs from 60 districts in eight divisions (eight strata) based on population proportional to size using Population and Housing Census 2011. Here, the size was defined in terms of the number of households (see Annex Table A.1.1 for the detailed distribution). Figure 2.1 shows the upazilas (sub-districts) covered for the survey.

The selection of 20 households within each PSU was executed using systematic random sampling. Enumerator teams first listed the number of households in the selected PSU and then the team leader calculated the sampling interval between households.

## 2.4. Survey Instrument

The survey questionnaire was developed based on the main research questions discussed earlier in the first chapter. It had four main sections: (i) household roster, (ii) digital literacy, (iii) social status and influence, and (iv) e-services.

The household roster section asked for standard household information. With a special focus on ICT, it also asked about individual's access to ICT facilities, such as mobile phones, computers, and the internet. Besides, it estimated the distance to the nearest ICT facilities, e.g. computer shops, Union Digital Centres (UDCs), etc.

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<sup>4</sup>“Primary Sampling Unit (PSU) refers to sampling units that are selected in the first (primary) stage of a multi-stage sample, ultimately aimed at selecting individual elements.” –Encyclopedia of Survey Research Methods, SAGE

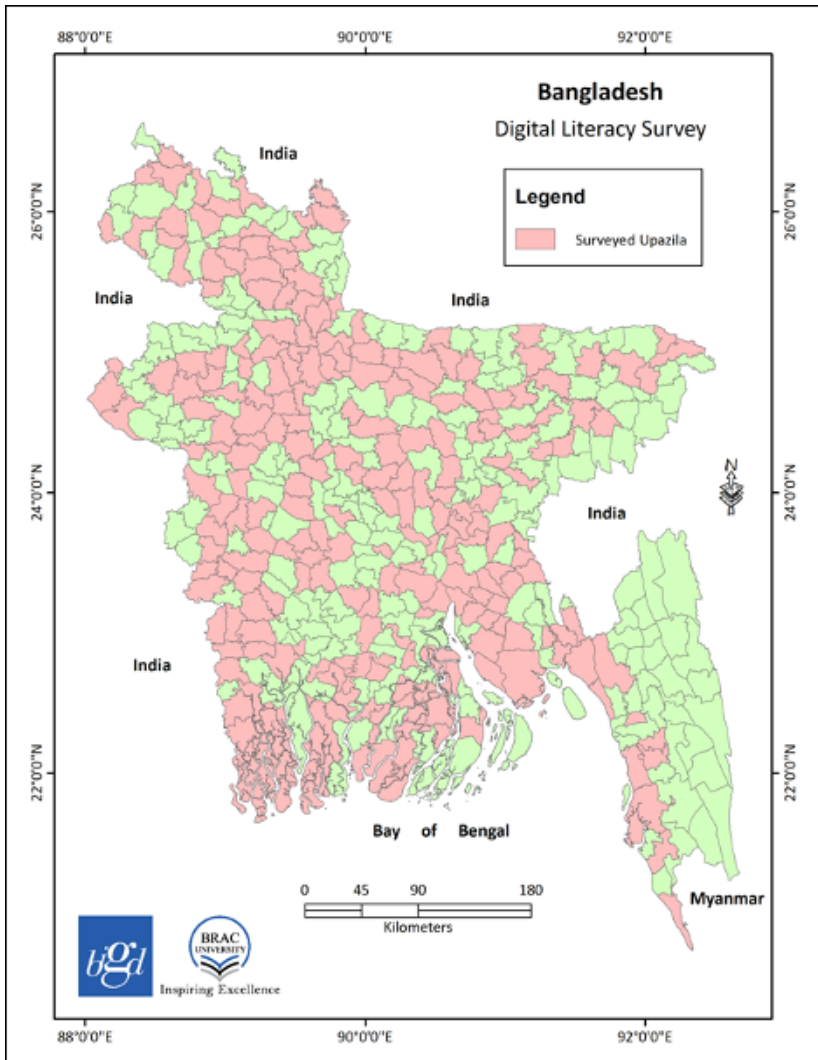


Figure 2.1. Distribution of upazilas selected for the survey

## QUESTIONS on digital literacy and digital literacy test

Among the different sections in the questionnaire, the section on digital literacy was the most innovative. The questions of this section were answered by the MDAP in the household, as identified by the household members themselves. While there were direct questions on their knowledge and use of mobile phones, computers, and the internet, it was assumed that self-reported responses may not give a complete and accurate measurement of a household's digital literacy level. As such, some hands-on tests were included to assess the ability of the digitally literate members of the household—a practical technique that, to the best of our knowledge, has not been used in Bangladesh in a rural setting before.

Assuming that rural households could not have acquired advanced digital literacy similar to urban households, the tests were designed to be of basic level. The first test aimed to assess respondent's internet browsing ability. The enumerators held out their tablets to show the homepage of the Bangladesh Department of Immigration and Passport and respondents were tested on their ability to browse the website and find information on the i) passport application form, ii) passport fees, and iii) hotline numbers for the passport office. For the second test, which aimed to assess whether the respondents could identify common visual icons, five picture icons were shown which depicted hotline numbers of five government entities (Figure 2.2). The respondents were asked to look at the pictures and say what information they provided. For both tests, the survey recorded whether the respondents were able to complete the task and the duration it took to complete it.



Figure 2.2. Visual icons shown for the digital literacy test

## 3. Descriptive Survey Findings on Digital Literacy

Digital literacy being a multi-dimensional concept, the descriptive findings on digital literacy from the “Digital Literacy and Access to Public Services” survey can be categorized into several sections. The first section of this chapter presents findings on digital access, followed by a section on digital skills—the two dimensions of digital literacy. Since the information on digital literacy was provided by the most digitally able person (MDAP) in the household, the third section looks at the profile of the MDAP in the household. And lastly, the fourth and final section of this chapter provides individual-level information on digital device and internet usage.

### 3.1. Digital Access

Digital access can be understood as one or more people’s access and connectivity to and ownership of a wide range of digital electronic devices and networks. However, among these various devices and networks, mobile phones, computers, and the internet stand out as the most prominent access points that define digital access.

#### 3.1.1. Access to Mobile Phones

Households were asked if they had used a mobile phone or not. To which, we found that 95.9% of the households have used a mobile phone (Table 3.1). More than half of these households have had access to only feature phones, whereas 11% have had both feature and smartphones available to them.

**Table 3.1. Access to mobile phones**

Access to mobile phones	Frequency	Percentage
Yes	6,230	95.85
Of which		
Smartphone	1,960	30.15
Feature phone	3,560	54.77
Both feature and smartphone	710	10.92
No	270	4.15
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Though a significant number of households have access to mobile phones, having access to a mobile phone does not always mean that the household owns one. In that light, a slightly lower proportion (92.4%) of the surveyed households, by comparison, are found to own mobile phones. Of these mobile phone-owning households, as seen in Table 3.2, while 53.9% of the households own feature phones, 28.9% own smartphones. The share of households that own both feature and smartphones accounts for only 9.63%.

**Table 3.2. Ownership of mobile phones by type**

Ownership of mobile phones by type	Frequency	Percentage
Smartphone	1,875	28.85
Feature phone	3,502	53.88
Both feature and smartphone	626	9.63
No phone	497	7.65
Total	6,500	100.00

Source: BIGD Digital Literacy Survey 2019



### 3.1.2. Access to Computers

In a rural household, it is not common to own a computer. Accordingly, we find that only 2.40% of the households own computers (Table 3.3). More often there are accessible computer shops nearby. However, it is noteworthy that less than half (46.78%) of the rural households have access to these computer shops in their village, while the rest do not.

**Table 3.3. Computer ownership and availability**

Ownership of computers	Frequency	Percentage
Yes	156	2.40
No	6,344	97.60
Total	6,500	100
Availability of computer facility in rural areas		
Number of computer shops in the village		
Only 1	636	9.78
Less than 5	1,841	28.32
Around 10	564	8.68
No computer shop	3,459	53.22
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

From Table 3.4, it can also be seen that a large portion (77.54%) of households reportedly cannot operate a computer. Among those who can and do operate them, 2.40% of the households own and use computers at home, while 5.94% use computers at their office or nearby computer shops or other people's houses.

**Table 3.4. Location of computer use**

Location of computer use	Frequency	Percentage
Computer available at home	156	2.40
Use computer from office/nearby shops/other people's houses	386	5.94
Do not need it	918	14.12
Cannot operate it	5,040	77.54
Total	6,500	100.00

Source: BIGD Digital Literacy Survey 2019

### 3.1.3. Access to Internet

To find out if rural households are aware of the internet, we asked the respondents whether they have ever heard the term "internet", to which 90.2% replied in the affirmative (Table 3.5). In terms of the level of awareness/understanding of the internet, only 10.65% of the households said that they know a lot about the internet. Meanwhile, 35.63% of the households responded that they know the term and a little about it, whereas 36.04% have only heard or know the term but do not know much about it.

**Table 3.5. Familiarity with the internet**

Familiarity with the internet	Frequency	Percentage
Yes	5,864	90.22
No	636	9.78
Total	6,500	100
Level of familiarity/understanding		
Have only heard or know the term, but do not know much about it	2,343	36.04
Know the term and a little about it	2,316	35.63
Know the term and a lot about what it is	692	10.65
Do not know	1,149	17.68
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Delving deeper, it was found that though over 90% of the households are aware of the internet, the majority (63%) do not use the internet (Table 3.6). Of those who do use the internet, 34.75% of the households do so with a broadband or mobile data connection, while 2.34% of the households use the internet at a computer shop or from other’s phones. Furthermore, we found that 22.04% of these households use the internet daily, followed by 10.76% who use the internet once a week.

**Table 3.6. Internet connectivity and frequency of usage**

Internet connectivity	Frequency	Percentage
Computer shop or other’s phone	152	2.34
Broadband or mobile data	2,253	34.66
No	4,095	63.00
Total	6,500	100
Frequency of usage		
Daily	1,433	22.04
Once a week	699	10.76
Rarely/occasionally*	273	4.20
Do not use	4,095	63.00
Total	6,500	100

\* Rarely/occasionally is defined by monthly or yearly usage of internet.

Source: BIGD Digital Literacy Survey 2019

### 3.1.4. Digital Infrastructure

Digital infrastructure plays a significant role in people’s access to mobile phones, computers, and the internet. It is, in fact, the primary requisite for digital access.

#### Νεαρεστ ΙΧΤ φαχίλιτιεσ

When people do not have digital access at their home, often they travel to the nearest information and communications technology (ICT) facilities. The distance of such facilities from one’s house, however, can

significantly affect their digital access. Looking into this factor, we found that, as seen in Table 3.7, walking is the preferred mode of travel for the majority of the households (see Annexe Table A. 4.73 for other modes of travel). Nearly 60% of the households prefer walking to the market; for 27% of these households, it is less than a ten-minute walk. Around 59% of the households prefer walking to the nearest computer shop, which takes 26% of the households less than 10 minutes. Households were also asked about their travel to the nearest Union Digital Centre (UDC). Around 27% of the households replied that they choose to walk to the nearest UDC; however, it takes 20% of these households more than 10 minutes to reach the destination.

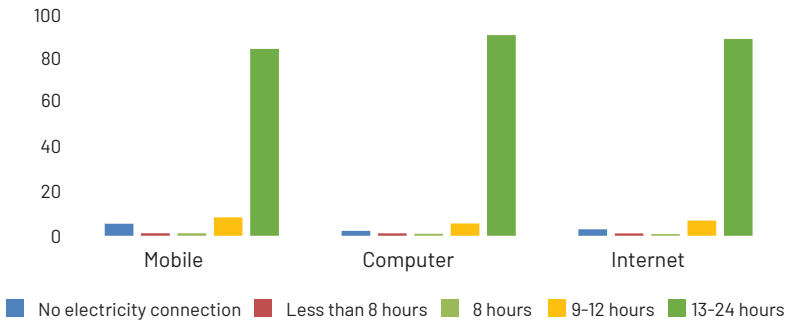
**Table 3.7. Walking time to the nearest ICT facilities**

	Market	Computer shop	Union Digital Centre (UDC)
Number of households which prefer walking	3,915	3,845	1,736
% of households which prefer walking	60.23	59.15	26.70
Less than 10 min walk (%)	26.88	25.85	6.48
10 to 20 min walk (%)	27.49	26.85	11.43
More than 20 min walk (%)	5.86	6.46	8.80
Average walking time (minutes)	11.39	11.83	22.00

Source: BIGD Digital Literacy Survey 2019

### ***Electricity and access to mobile phones, computers, and the internet***

Seen in Figure 3.1, electricity availability can also significantly affect one's access to mobile phones, computers, and the internet. We find that access to mobile phones, computers, and the internet is staggeringly higher (84%, 90.2%, and 88.5%, respectively) among households which have 13 to 24 hours of electricity compared to those which have no or less than 13 hours of electricity.

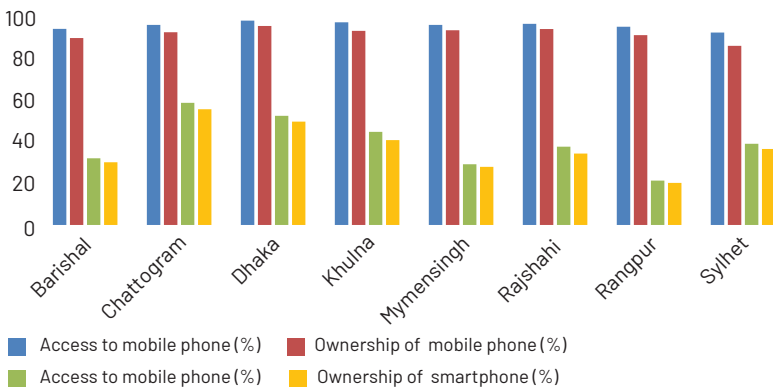


**Figure 3.1. Electricity availability and access to mobile phones, computers, and internet (% of HHs)**

Source: BIGD Digital Literacy Survey 2019

### 3.1.5. Regional Heterogeneity

Just as households vary in their level of digital access, similar heterogeneity persists across different regions. Looking at the regional heterogeneity for mobile phone access, we find that more than 90% of the households across all regions of the country have access to mobile phones (Figure 3.2). In this respect, Dhaka has the highest percentage of both mobile phone access (97.78%) and ownership (95.24%), while Sylhet has the lowest (92.05% for mobile access and 85.68% for mobile ownership). In terms of access to

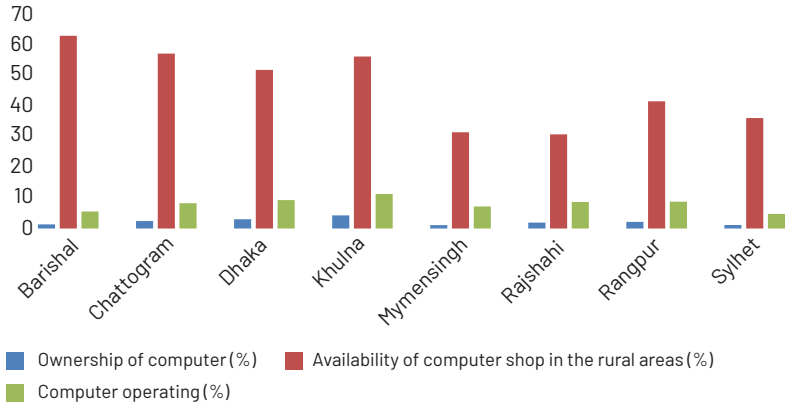


**Figure 3.2. Access to mobile phones by region (% of HHs)**

Source: BIGD Digital Literacy Survey 2019

smartphones, Chattogram division has the highest access, while Rangpur has the lowest (58.47% vs 21.20%). As for smartphone ownership, Chattogram division ranks highest with 55.41% of its households owning smartphones, whereas Rangpur ranks the lowest where only 20.1% of the households own a smartphone.

As discussed earlier, owning computers is less popular in rural areas, and most users rely on computer shops for their needs. However, among all the surveyed regions, ownership of computers appears to be lowest in Mymensingh and Sylhet—in both of these divisions only 1.11% of the households own a computer (Figure 3.3). Meanwhile, the highest computer ownership is observed among the households in Khulna (4.3%), followed by Dhaka (3.02%)—which are still negligible numbers. Moreover, as discussed previously, we know that about half of the rural households in Bangladesh can go to computer shops in their village to access computers. This rate is 63.08% for Barisal division—the highest among the eight divisions, while is only 30.82% for Rajshahi division, which is the lowest. In terms of computer usage, we found that among the eight divisions, computer usage is highest in Khulna (11.28%) and lowest in Sylhet where only 4.77% of the households use computers.

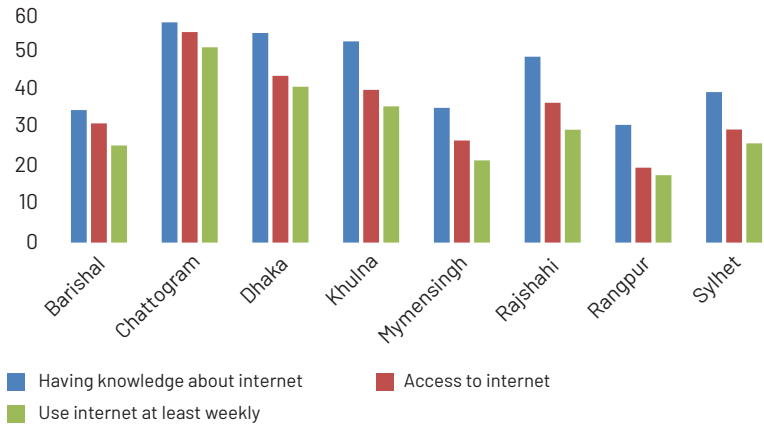


**Figure 3.3. Access to computers by region (% of HHs)**

Source: BIGD Digital Literacy Survey 2019

Significant regional heterogeneity also exists among household’s knowledge of and access to the internet. As shown in Figure 3.4, 57.55% of the households in Chattogram know about the internet

which is the highest among the eight divisions, followed by Dhaka with a rate of 54.77%. Meanwhile, Rangpur division ranks the lowest where only 30.75% of the households are aware of the internet. In terms of accessibility, 55% of the households from Chattogram division have access to the internet, while the rate is 43.57% for Dhaka division. In this case, Rangpur division, again, comes in the final place (19.57%). As mentioned previously, 32.8% of the households use the internet at least once a week. In divisional disaggregation, we see that 51.02% of the households in Chattogram division do the same. This rate is once again lowest for Rangpur division at 17.61% only.



**Figure 3.4. Access to the internet by region**

Source: BIGD Digital Literacy Survey 2019

### 3.2. Digital Skills

Digital access being one, the other dimension of digital literacy includes digital skills which allow people to use the digital devices and networks accessible to them. Based on how people use them, digital skills can be broadly classified into three groups: communication skills, information skills, and problem-solving skills.

### 3.2.1. Communication Skills

Among the various communications skills, reading and sending text messages through short messaging service (SMS) have been classified as one of the most important digital communication skills in using mobile phones. Evaluating their level of expertise under this skill, we found that 32% of the households cannot read and nearly 48% cannot send mobile SMS (Table 3.8). Interestingly, 45.5% of the households can read and 39.7% can send SMS in both Bangla and English.

Checking and sending emails represent digital communication skills in using computers. Here, 10.3% of the respondents stated that they have email accounts and can check emails, while a slightly lower percentage (8.1%) can send emails.

Use of video-calling apps to make calls and participation in social media can show how households use the internet to communicate with others. We see that 15.4% of rural households use Skype, imo, WhatsApp, or similar apps for video calls. Households also use Facebook, Twitter, and other social media to interact with one another. The recent rise in popularity of social media enables households to share views and communicate with others, making 40.5% of the households active in social media. The ability to comment on social media is also an indicator of active participation and communication skill of an individual. Findings show that 27.85% of households can post comments on social media.

**Table 3.8. Ability to use mobile phone, computer, and internet to communicate**

	Frequency	Percentage
Ability to read SMS		
Only Bangla	1,462	22.50
Yes, both Bangla and English	2,959	45.52
No	2,074	31.98
Total	6,500	100
Ability to send SMS		

[ Table 3.8. contd... ]



[ ...Table 3.8. contd ]

	Frequency	Percentage
Yes, only Bangala	799	12.30
Yes, both Bangla and English	2,579	39.66
No	3,122	48.04
Total	6,500	100
Check emails		
Yes	669	10.29
No	5,831	89.71
Total	6,500	100
Send emails		
Yes	529	8.14
No	5,971	91.86
Total	6,500	100
Use of video-calling apps		
Yes	998	15.35
No	5,502	84.65
Total	6,500	100
Use of any social media		
Yes	2,633	40.51
No	3,867	59.49
Total	6,500	100
Commenting on social media		
Yes	1,810	27.85
No	4,690	72.15
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

### 3.2.2. Information Skills

Information skills represent households' ability to look for and obtain information on the internet using their mobile phones or computers. In this respect, our result shows that 27.08% of the households can browse the internet (Table 3.9).

**Table 3.9. Browsing the internet**

Ability to browse the internet	Frequency	Percentage
Yes	1,762	27.11
No	4,738	72.89
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Besides answering yes/no questions on digital literacy, the MDAP in a household was also asked to perform three tasks, as mentioned in Chapter 2, to test the respondent's ability to find information online: (i) finding passport application form, (ii) finding passport application fee, and (iii) finding passport office hotline number. The brief descriptions of the test results provided in Table 3.10 show that only 11.1% of the households successfully passed all the three tests and 1.26% of households passed two out of three tests. The results infer that households that can pass the first test can easily pass the next two. On the other hand, 85.8% of the households were unable to pass any of the three tests. This is a significant finding, as the passport application is a fully digital process in Bangladesh. Our findings suggest that the majority of the rural population cannot use this service without assistance. Detailed results from the tasks are presented in Annexe Table A. 3.1.

**Table 3.10. Number of tests successfully passed**

Number of tests successfully passed	Frequency	Percentage
None	5,575	85.77
Website shut down	77	1.18
One out of the three	45	0.69
Two out of the three	82	1.26
Three out of the three	721	11.09
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

We can also see in Table 3.11 that those who could complete the task, on average, it took them 2.92 minutes to find out the passport application form. Similarly, it took 2.41 and 2.71 minutes on an average for finding out passport application fee and passport hotline number, respectively. The median time for all the tasks is 2 minutes.

**Table 3.11. Time needed to complete the tasks**

	Average time (minutes)	SD	Median	Min	Max	Number of observations
Task 1	2.92	1.88	2	1	10	708
Task 2	2.41	1.61	2	0.5	10	781
Task 3	2.71	1.74	2	0.5	10	776

Note: Time outlier corrected (maximum time is 10 minutes)

Source: BIGD Digital Literacy Survey 2019

Households were also tested on their ability to identify common visual icons. Five images of government hotline numbers with symbols were shown and the MDAP was asked to identify the information present in the images. Detailed results on the visual skill test are provided in Annex Table A. 3.2.

As shown in Table 3.12, almost 54% of the households could not identify any of the five images. However, nearly 30% could identify all five of the images. This shows that although browsing and finding information is still a challenge, one-third of the respondents are familiar with common icons that are used in government websites.

Table 3.12. Number of images identified by households

Visual literacy test	Frequency	Percentage
None	3,502	53.88
One out of the five	403	6.20
Two out of the five	233	3.58
Three out of the five	182	2.80
Four out of the five	265	4.08
Five out of the five	1915	29.46
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

### 3.2.3. Problem-solving Skills

In the European Union (EU) Digital Competence Framework (see Chapter 3), problem-solving skills have been defined as the ability to identify digital needs and resources, make informed decisions as to which are the most appropriate digital tools according to the purpose or need, solve conceptual problems through digital means, creatively use technologies, solve technical problems, update one's own and others' competences.

To depict a complete picture of households' ability to solve problems using digital devices, households were asked about the sort of activities they used the internet for. We rounded down all the internet activities of the households under two broad categories: functional and entertainment. Whereas functional activities include reading news, online training, bill payments, and searching for online information, entertainment activities, on the other hand, include playing or downloading games, watching YouTube videos, etc. Table 3.13 shows that less than 1% of the

households use the internet only for functional activities, while 20% use it for both functional and entertainment activities. The detailed findings on these activities are presented in Annexe A. 3.

**Table 3.13. Broad categories of internet usage**

Using the internet for different activities	Frequency	Percentage
Only entertainment	423	6.51
Only functional	42	0.65
Both functional and entertainment	1,297	19.95
Do not use at all	4,738	72.89
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Likewise, we listed all the computer activities<sup>5</sup> that households engage in under two broad categories: productive and entertainment. In this case, productive activities include the kind of activities which add value to the households, such as searching for information, earning activities, and typing practice, while entertainment activities are those that give the user pleasure and amusement.

Results in Table 3.14 show that 3.02% of the households use computers for productive activities whereas 3.09% use computers for both productive and entertainment activities. Less than 1% of households use computers only for entertainment purposes.

**Table 3.14. Broad categories of computer usage**

Computer usage for different purposes	Frequency	Percentage
Only entertainment	125	1.92
Only productive	196	3.02
Both productive and entertainment	201	3.09
Do not use at all	5,978	91.97
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

<sup>5</sup> Detailed information on computer activities are given in Annexe A. 3.

### 3.2.4. Regional Heterogeneity

As in digital access, regional heterogeneity also persists in the three domains of digital skills: communication, information, and problem-solving.

In terms of communication skills, households in Chattogram and Khulna divisions display high communications skills (Table 3.15). For example, 63% of the households in Chattogram and 42% in Khulna participate in social media. Conversely, households in Mymensingh and Sylhet divisions have the poorest communication skills, where only 30% and 36% of the households participate in social media, respectively.

Looking into information skills across the regional divisions, we find that Chattogram, Rajshahi, and Dhaka are the highest performing regions where 37%, 32%, and 30% of households respectively can browse the internet (Table 3.16). On the other hand, Sylhet, Rangpur, and Mymensingh have the lowest internet browsing skills.

In the three browsing tasks on the passport website, Chattogram, Dhaka, and Khulna divisions performed the best, while Sylhet and Rangpur divisions performed the worst.

Interestingly, based on the results from the visual icon identification test, it was found that Barisal and Khulna are top performers, but Sylhet, yet once again, is the poorest performer.

As for the use of the internet for functional and entertainment activities, it is found that 28.47% of the households from Chattogram division use the internet for functional activities and 36.84% for entertainment activities. In Sylhet division, only 11.82% of the households use the internet for functional activities and 15.45% for entertainment activities.

**Table 3.15. Regional heterogeneity in communication skills**

	Total	Barisal	Chattogram	Dhaka	Khulna	Mymensingh	Rajshahi	Rangpur	Sylhet
Can read SMS (%)	68.02	65.96	67.04	70.63	72.44	60.56	72.24	66.30	59.77
Can send SMS (%)	51.97	48.27	56.73	54.52	55.93	42.41	55.61	47.39	43.86
Can check emails (%)	10.29	6.92	13.27	12.38	13.14	8.33	8.57	8.04	7.05
Can send emails (%)	8.14	5.77	9.90	10.24	11.28	5.93	6.84	5.98	5.00
Use video-calling apps (%)	15.35	18.85	14.90	12.62	17.09	16.67	14.49	11.74	24.55
Participate in social media (%)	40.51	30.00	63.47	47.54	42.09	30.19	37.35	22.61	35.68
Comment on social media (%)	27.85	24.62	37.45	29.05	30.93	19.81	29.39	20.11	23.41

Source: BIGD Digital Literacy Survey 2019

**Table 3.16. Regional heterogeneity in information skills**

Regional variation	Total	Barisal	Chattogram	Dhaka	Khulna	Mymensingh	Rajshahi	Rangpur	Sylhet
Browsing internet for information (%)	27.11	22.88	36.94	30.48	28.84	20.00	32.04	16.96	16.14
Successfully completed digital activity									
Task 1	11.58	13.27	14.08	14.76	14.77	9.81	10.61	6.74	3.18
Task 2	12.35	14.23	14.90	16.19	15.12	10.93	10.92	7.28	3.64
Task 3	12.55	14.42	14.90	16.03	15.58	11.48	11.43	7.83	2.95
Successfully completed visual skill test									
Picture 1	35.91	44.62	28.98	37.14	48.02	33.70	35.00	33.70	23.18
Picture 2	38.11	47.50	29.80	37.54	49.65	35.37	39.29	38.59	24.32
Picture 3	34.57	44.81	26.43	35.79	43.84	30.37	36.22	33.37	22.95
Picture 4	36.43	47.88	30.41	36.35	47.09	34.44	35.61	35.11	22.73
Picture 5	40.37	48.46	32.24	43.89	49.53	37.96	39.59	40.22	25.91

Source: BIGD Digital Literacy Survey 2019

**Table 3.17. Regional heterogeneity in internet activities**

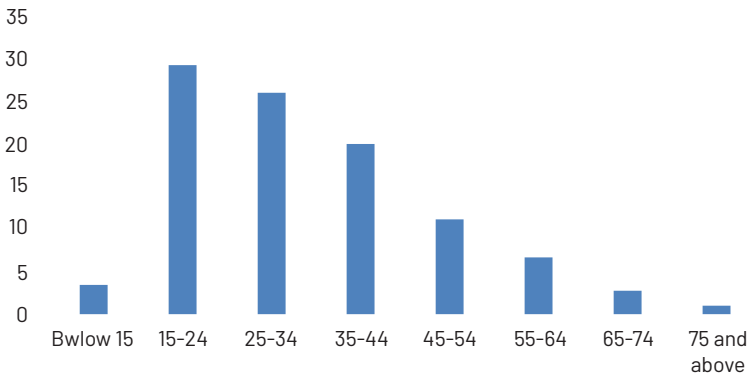
Regional variation	Total	Barisal	Chattogram	Dhaka	Khulna	Mymensingh	Rajshahi	Rangpur	Sylhet
Functional activities using internet (%)	20.60	19.04	28.47	23.02	24.42	13.33	19.90	15.43	11.82
Entertainment activities using internet (%)	26.46	22.31	36.84	29.68	28.02	19.63	31.22	16.09	15.45



### 3.3. Map Profile Analysis

Since the survey questions on digital literacy were answered by the household's most digitally able person (MDAP), a brief profile of the MDAP that looks into the person's age, education, literacy, gender, and other characteristics can help provide further insights into digital literacy.

Judging by the age distribution of the MDAP in the household, we see that 78.5% of the MDAPs are aged below 44 (Figure 3.5). Of them, 29.2% of the individuals are aged in between 15-24 years and 26% are aged in between 25-34. Only 10.39% of individuals are older than 55 years.

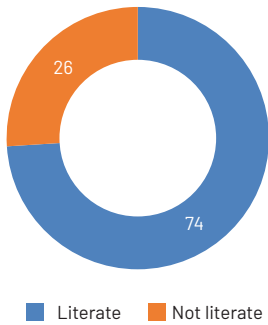


**Figure 3.5. Age distribution of the MDAP in the household**

Source: BIGD Digital Literacy Survey 2019

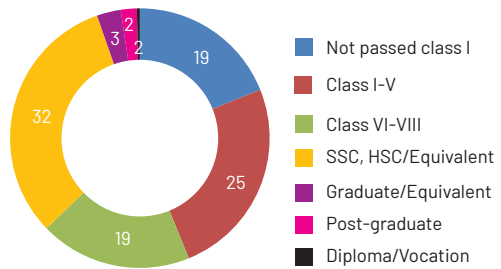
In terms of literacy, 73.7% of the MDAP are literate while the rest are illiterate (Figure 3.6).

In terms of education (Figure 3.7), we found that that 32.4% of the individuals have passed Secondary School Certificate (SSC), Higher Secondary School Certificate (HSC), or equivalent. Moreover, we found that 24.8% of the individuals have passed Class I to V, while 19.4% have an education level in between Class VI to VIII.



**Figure 3.6. Literacy level of the MDAP**

Source: BIGD Digital Literacy Survey 2019



**Figure 3.7. Educational level of the MDAP**

Source: BIGD Digital Literacy Survey 2019

In our study, 48.7% of the digitally literate respondents were household heads (Table 3.18). Moreover, 12.6% were partners to the household head, 22.6% were sons, and 13.7% were daughters or daughters-in-law.

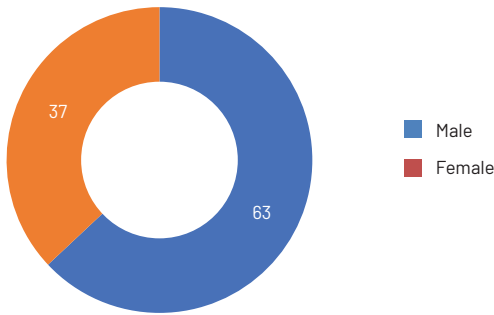
**Table 3.18. Relation of the MDAP to the household head**

Member	Frequency	Percentage
Household head	3,165	48.69
Relationship with the household head		
Partner (Husband/Wife)	819	12.58
Son	1,468	22.58
Daughter	530	8.15
Daughter-in-law	361	5.55
Others	157	2.42
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Figure 3.8 shows that nearly two-thirds (63.09%) of the MDAPs are male while the rest are female.

In the case of marital status, nearly three-quarters of the MDAPs are currently married and a quarter unmarried (Table 3.19).



**Figure 3.8. Gender of the digitally literate individual**

Source: BIGD Digital Literacy Survey 2019

**Table 3.19. Marital status of the MDAP**

Marital status	Frequency	Percentage
Unmarried	1,675	25.77
Currently married	4,567	70.37
Divorced/separated/ disserted/widowed	251	3.86
Total	6,500	100

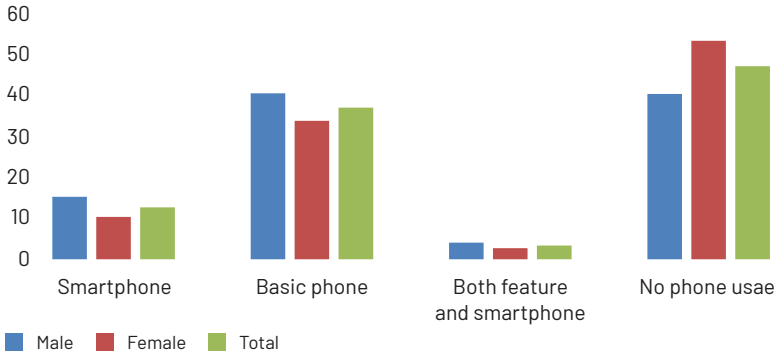
Source: BIGD Digital Literacy Survey

### 3.4. Individual-level Descriptive Information on Digital Usage

Besides getting information on digital literacy at the household level, as described in the earlier sections, this survey also collected information on mobile, computer, and internet usage at the individual level. The individual-level findings are presented below.

## Gender

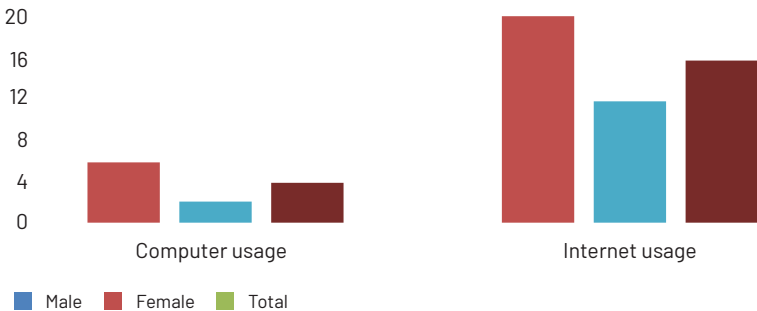
Our findings, as presented in Figure 3.9, show that 47% of the surveyed individuals do not use a mobile phone. Smartphone use is even lower (only 13%). Regardless of the type of phone, we found that women lag behind men in phone usage.



**Figure 3.9. Mobile phone usage by gender**

Source: BIGD Digital Literacy Survey 2019

As Figure 3.10 shows, compared to mobile phone usage, computer and internet usage among respondents is very low. While internet usage is 16%, computer usage is only 4%. Similar to mobile phone usage, female use of computers and internet is much lower than that of males.

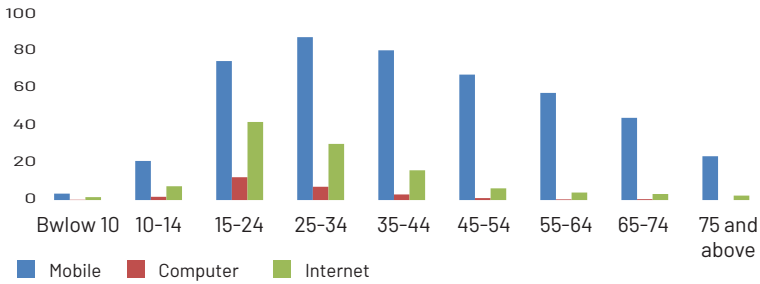


**Figure 3.10. Computer and internet usage by gender**

Source: BIGD Digital Literacy Survey 2019

## Age

Figure 3.11 displays the age distribution of mobile phone, internet, and computer usage. It is seen that usage peaks towards the younger age groups, specifically 15 to 34 year age range and declines as the individuals get older.

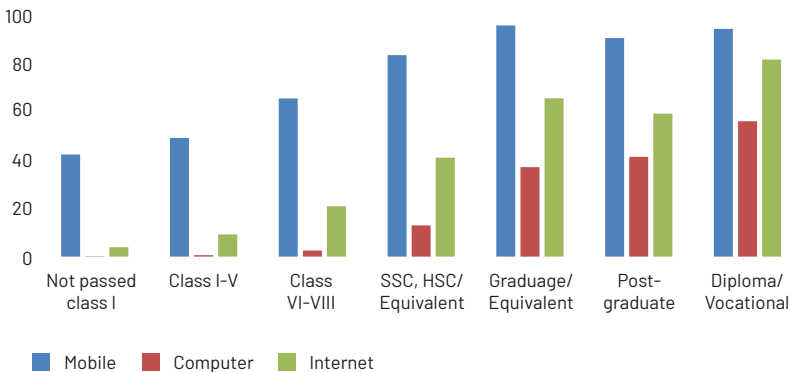


**Figure 3.11. Mobile phone, computer, and internet usage by age**

Source: BIGD Digital Literacy Survey 2019

## Education

When individuals' digital usage is broken down by their level of education, we see that there is a clear upward trend in usage of all three categories with a higher education level (Figure 3.12).

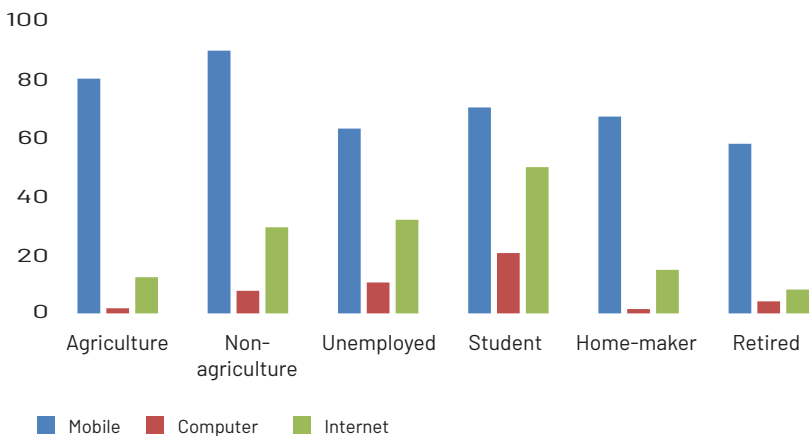


**Figure 3.12. Mobile phone, computer, and internet usage by education (5 years and older)**

Source: BIGD Digital Literacy Survey 2019

## Occupation

As shown in Figure 3.13, when people's mobile phone, computer, and internet usage is assessed by their occupations, we find that 90% of those in non-agriculture use mobile phones, followed by 81% in agriculture and 71% students. Computer and internet usage is highest among students (21% and 50%, respectively) and second-highest among those who are unemployed. While, mobile usage and internet usage is lowest for those who are retired (58% and 8%, respectively), computer usage is lowest among those who are in agriculture and those who are homemakers (2% each).

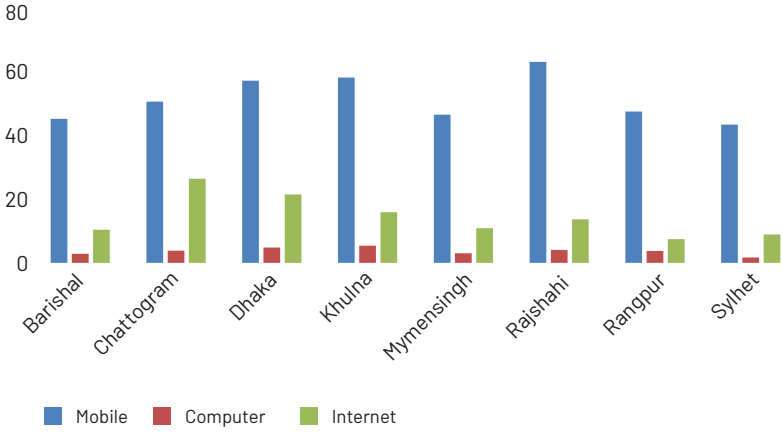


**Figure 3.13. Mobile phone, computer, and internet usage by occupation (15 to 64 years)**

Source: BIGD Digital Literacy Survey 2019

## Regional variation

Depending on where people live, regional variations also affect an individual's mobile phone, computer, and internet usages. As we can see in Figure 3.14, mobile phone usage is highest in Rajshahi, Khulna, and Chattogram divisions and lowest in Sylhet. Computer usage is highest in Dhaka and Khulna while lowest in Sylhet. Internet usage is highest in Chattogram and Dhaka and lowest in Rangpur.



**Figure 3.14. Regional variation in mobile phone, computer, and internet usage**

Source: BIGD Digital Literacy Survey 2019

## 4. Digital Literacy

### Conceptual Framework and Methodology

Digital literacy is defined in several ways across the literature but in all cases, is well recognized as a multidimensional concept (Park, 2012; Chetty et al., 2018; and references therein). Various terms and phrases have been coined in the literature to describe the core idea of digital literacy<sup>6</sup> which come with their own conceptual frameworks.

Existing literature deals with digital literacy at the individual level and the frameworks are mostly developed and conceptualized in the context of a developed country that often include higher and tertiary level indicators (see Table 4.1 for the dimensions and domains of digital literacy that have been formulated in the current literature).

**Table 4.1. Framework for digital literacy in the existing literature**

	Dimensions/Levels	Domains/Pillars
DigComp by JRC and DG EAC <sup>7</sup>		<ul style="list-style-type: none"> <li>• information and data literacy</li> <li>• communication and collaboration</li> <li>• digital content creation</li> <li>• safety</li> <li>• problem-solving</li> </ul>
Chetty et al. (2018)	<ul style="list-style-type: none"> <li>• cognitive</li> <li>• technical</li> <li>• ethical</li> </ul>	<ul style="list-style-type: none"> <li>• information</li> <li>• computer</li> <li>• media</li> <li>• communication</li> <li>• technology</li> </ul>

[ Table 4.1. contd... ]

<sup>6</sup> For example, ICT literacy, media literacy, digital competency, information literacy, e-skills, e-literacy, media and information literacy, computer literacy, media education, multi-literacies, technology literacies, etc. See Spante et al. (2018) and Gallardo-Echenique et al. (2015) for a discussion on this.

<sup>7</sup> See <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>



[ ...Table 4.1. contd ]

	Dimensions/Levels	Domains/Pillars
Rosa (2014)	<ul style="list-style-type: none"> <li>• technical-operational</li> <li>• informational skills</li> </ul>	<ul style="list-style-type: none"> <li>• recognition</li> <li>• use</li> <li>• photo-visual</li> <li>• reproduction</li> <li>• branching</li> <li>• information</li> <li>• social interaction</li> </ul>
Park (2012)	<ul style="list-style-type: none"> <li>• access</li> <li>• understand</li> <li>• create</li> </ul>	<ul style="list-style-type: none"> <li>• device literacy</li> <li>• content literacy</li> </ul>
Martin (2003, 2009)	<ul style="list-style-type: none"> <li>• level 1: digital competence</li> <li>• level 2: digital usage</li> <li>• level 3: digital transformation</li> </ul>	<ul style="list-style-type: none"> <li>• skills</li> <li>• concepts</li> <li>• approaches</li> <li>• attitudes</li> <li>• professional/discipline application</li> <li>• innovation/creativity</li> </ul>

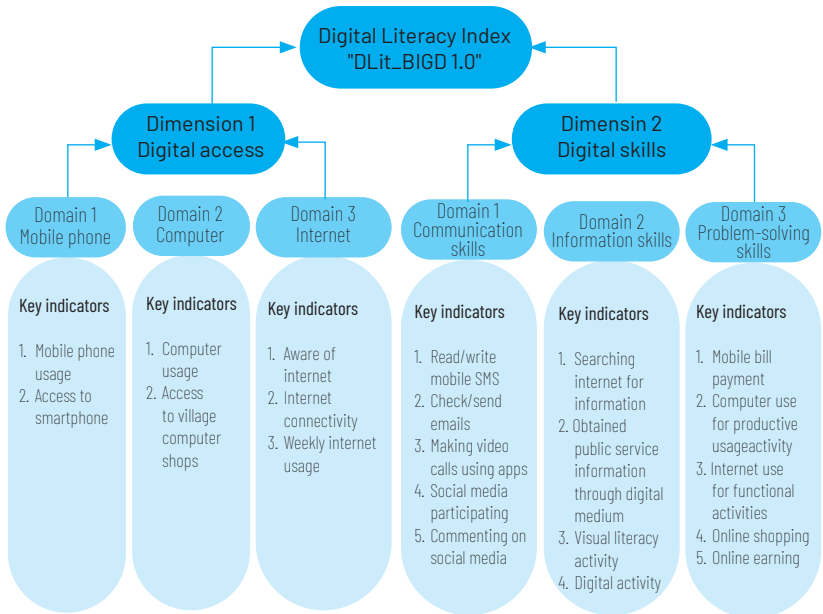
## 4.1. The Proposed Framework

Based on the descriptives presented in the previous chapter, we developed a framework for a digital literacy index (DLI) which we are calling “DLit\_BIGD 1.0”. The framework for digital literacy proposed in this report draws from the existing frameworks with appropriate

modifications to conceptualize digital literacy in the context of a rural household. Keeping the low access and low exposure criteria in mind, this framework adds digital access as a dimension, which was absent in the previously published papers. Furthermore, the proposed framework only considers Level 1 (digital competence) of Martin’s (2003, 2009) typology. In such, it does not consider the higher and tertiary level indicators which are present in existing frameworks, making this framework more appropriate for a rural context. To measure the household-level digital literacy, as discussed in Chapter 2, we collected responses from the most digitally able person (MDAP) in the household. In other words, household-level digital literacy corresponds to the highest level of individual digital literacy available to that particular household.

Two dimensions have been identified for the digital literacy framework: digital access and digital skills.

Digital access includes ownership and access to digital devices, i.e. mobile phones and computers, and the internet—each of which is considered a domain. Under these three domains, there are a total of seven key indicators. The second dimension is about digital skills. This includes the basic technical and operational skills required to use digital devices and the internet. The digital skills dimension is comprised of three domains: information skills, communication skills, and problem-solving skills. These three domains contain a total of 14 key indicators. Figure 4.1 illustrates the proposed conceptual framework by defining dimensions, domains, and key indicators for measuring the digital literacy of a rural household in Bangladesh.



**Figure 4.1. Digital literacy conceptual framework for rural households in Bangladesh**

## 4.2. Methodology

The proposed analytical framework enables to construct a DLI, based on which the digital literacy of a rural household can be measured. One advantage of this framework is that it follows a bottom-up approach. First, it allows constructing the raw scores for each key indicator. Next, these scores will be used to classify households first at the domain-level and then at the dimension-level, namely digital access and digital skills. Finally, the overall DLI is then constructed as a composite index utilizing both digital access and digital skills indicators.

The methodology to construct the domain-level raw scores, and then the three indices—digital access index (DAI), digital skills index (DSI), and digital literacy index (DLI)—closely follows that of EU’s “Digital Skills Indicator”<sup>8</sup>.

### 4.2.1. Construction of Domain-level Raw Scores and Their Classification

Each key indicator considered in this construction is a dummy variable, where the indicator takes the value of 0 if the characteristic under consideration is absent, and 1 if the characteristic is present. In other words, if the indicator takes the value of 1, it contributes positively towards digital literacy.

For each household, the domain raw score is calculated simply as the sum of all indicators under that domain, i.e. for a particular domain, construct the raw score corresponding to the  $i$ -th household,  $i=1, \dots, 6500$ :

$$x_{i,raw}^{domain} = \sum_{j=1}^{k_d} x_{ij}$$

where  $x_{ij}$  is the value of the  $j$ -th indicator,  $j=1, \dots, k_d$  and  $k_d$  is the total number of indicators grouped under the domain under consideration.

Note that,  $0 \leq x_{i,raw}^{domain} \leq k_d$  is an integer-valued ordinal variable,

where  $x_{i,raw}^{domain} = r$  represents that the household possesses  $r$  domain level characteristics. The minimum value  $x_{i,raw}^{domain} \leq k_d = 0$  indicates the

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<sup>8</sup> see <https://ec.europa.eu/digital-single-market/en/news/new-comprehensive-digital-skills-indicator>

absence of all domain level characteristics and the maximum  $k_d$  value  $k_d$  represents the presence of all domain level characteristics.

### **Classification based on domain-level raw scores**

Based on the raw scores, the households are classified into the following three groups at the domain level:

$$x_{i,raw}^{domain} \begin{cases} = 0, & \text{"None at domain level"} \\ = 1, & \text{"Basic at domain level"} \\ = 2, & \text{"Above basic at domain level"} \end{cases}$$

If a household gets a domain raw score of 0, it indicates that the household demonstrates "none" of the domain-level characteristics. If a household scores 1, then the household is said to demonstrate "basic" domain-level characteristics. A score of more than 1 indicates that a household has "above-basic" characteristics at the domain level.

### **4.2.2. Dimension-level Classification**

Once the households are classified into the three levels ("none", "basic", and "above-basic") at all domain levels, following a similar logical approach, households are then classified into four groups ("none", "low", "basic", and "above-basic") for each dimension: digital access and digital skills. To be specific, the dimension-level classification criteria uses relevant domain-level classification described in Table 4.2.

**Table 4.2. Classification at the dimension level**

Dimension-level classification	Classification rule at the domain level
"None"	"None" in all domains
"Low"	"None" in at least one domain, but not in all domains
"Basic"	At least "Basic" in all domains
"Above-basic"	"Above-basic" in all domains

### 4,2,3. Composite Digital Literacy Index (DLI)

The steps for constructing the composite DLI are given below:

**Step 1:** Obtain the aggregate raw scores at each dimension level:

$$X_{i,raw}^{access} = X_{i,raw}^{phone} + X_{i,raw}^{computer} + X_{i,raw}^{internet}$$

$$X_{i,raw}^{DS} = X_{i,raw}^{communication} + X_{i,raw}^{information} + X_{i,raw}^{problem\ solving}$$

where “access” is short for digital access and “DS” is short for digital skills.

**Step 2:** Normalize each raw dimension scores from Step 1 using the minimax transformation (this makes it possible to aggregate the dimension scores involving a varying number of indicators which are not directly comparable):

$$X_{i,normal}^{dimension} = \frac{X_{i,raw}^{dimension} - \min(x_{i,raw}^{dimension})}{\max(x_{i,raw}^{dimension}) - \min(x_{i,raw}^{dimension})},$$

so that  $0 \leq x_{i,normal}^{dimension} \leq 1$ . Note that,  $x_{i,normal}^{dimension} = 0$  corresponds to the lowest value of  $x_{i,raw}^{dimension}$  and  $x_{i,normal}^{dimension} = 1$  corresponds to the maximum value of  $x_{i,raw}^{dimension}$ .

**Step 3:** Aggregate these normalized dimension scores to obtain the raw DLI scores. These raw DLI scores are again normalized to obtain the composite DLI scores.

$$DLI_{i,raw} = x_{i,normal}^{access} + x_{i,normal}^{DS}$$

$$DLI_i^{composite} = \frac{DLI_{i,raw} - \min(DLI_{i,raw})}{\max(DLI_{i,raw}) - \min(DLI_{i,raw})}$$

## Classification based on DLI

Based on the composite DLI, the households are classified as follows:

"below average" if  $DLI_i^{composite} < \text{median} ( DLI_i^{composite} )$  and

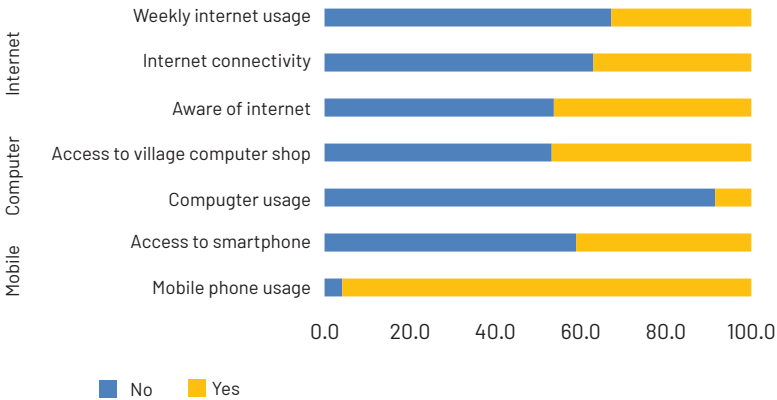
"above average" if  $DLI_i^{composite} \geq \text{median} ( DLI_i^{composite} )$

# 5. Digital Literacy Index Analysis And Results

## 5.1. Digital Access: Analysis and Results

For the computation of the Digital Literacy Index (DLI), as discussed in the previous chapter, the digital access dimension will include seven indicators under the domains of mobile phone, computer, and internet. These are: (i) mobile phone usage, (ii) access to smartphones, (iii) computer usage, (iv) access to village computer shops, (v) awareness of internet, (vi) internet connectivity, and (vii) weekly internet usage.

Grouped under three domains, Figure 5.1 shows the frequency distribution of these seven digital access indicators. Under the mobile domain, it can be seen that about 96% of the households use mobile phones, while the majority of them (59%) do not have access to a smartphone.<sup>9</sup> Only 8% of households use computers and computer ownership is even lower (2.4%). However, 50% of households have access to village computer



**Figure 5.1. Digital access: Frequency distribution (%) of key indicators**

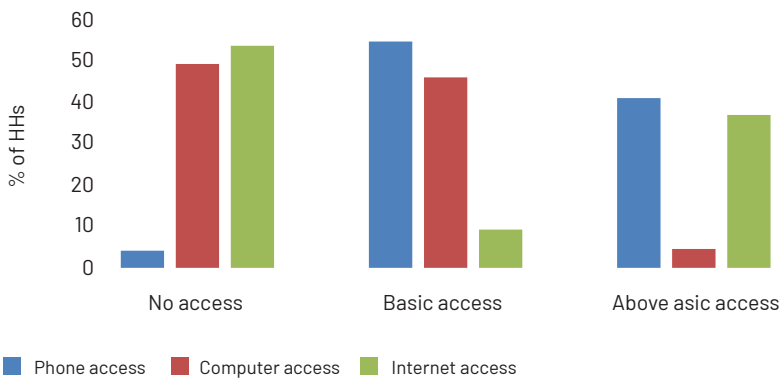
Source: BIGD Digital Literacy Survey 2019

<sup>9</sup> Only 38.5% of the rural households own a smartphone (see table 4.1). Access to smartphones is defined as having access to a smartphone whether the household owns it or not.

shops. For the internet domain, 46% households are aware of the internet, 37% have internet connectivity (either broadband or mobile data or both), and 33% households use the internet at least once a week.

### 5.1.1. Domain-level Analysis

The households are classified following the domain classification criteria discussed in the previous section and the varying degree of access across the domains of mobile, computer, and internet is evident (Figure 5.2)<sup>10</sup>. While majority of the households display high access to mobile phones, in case of computers, access is low. As for the internet, households either have no access or they have high access.



**Figure 5.2. Household classification (%) in terms of domain-level digital access**

Source: BIGD Digital Literacy Survey 2019

Note: The Spearman's rank correlation between the household classifications determined by these three domains provide evidence of a significant positive association between them, which is particularly strong between the classifications achieved by mobile and internet access domains (0.73), see Annexe Table A. 2.2.

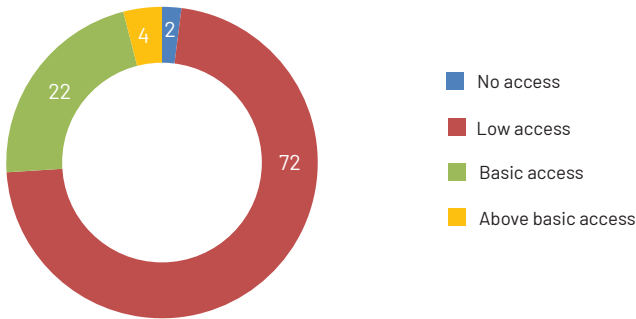
Source: BIGD Digital Literacy Survey 2019

<sup>10</sup> See Annexe Figure A. 2.2 for the frequency distribution of domain-level raw scores for



### 5.1.2. Dimension-level Analysis

Figure 5.3 displays the household classification (%) in terms of the overall (i.e. dimension-level) digital access. This was estimated by combining the domain-level household classifications, as shown in Table 5.1. We found that maximum households have overall low digital access. Survey data shows that 2% of the households have “no access”, 72% households have “low access”, 22% households have “basic access”, and 4% households have “above-basic access”.

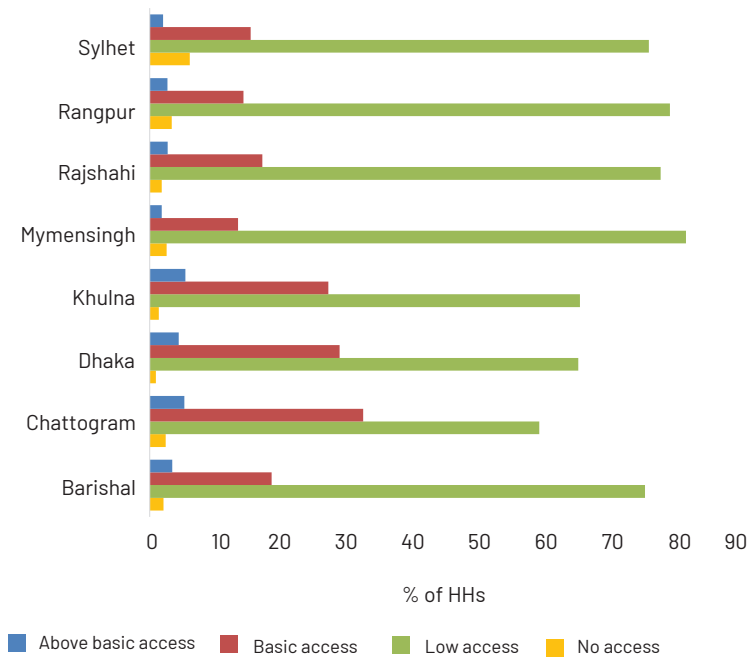


**Figure 5.3. Household classification (%) in terms of overall digital access**

Source: BIGD Digital Literacy Survey 2019

### 5.1.3. Regional Heterogeneity, Income Disparity, and Digital Access

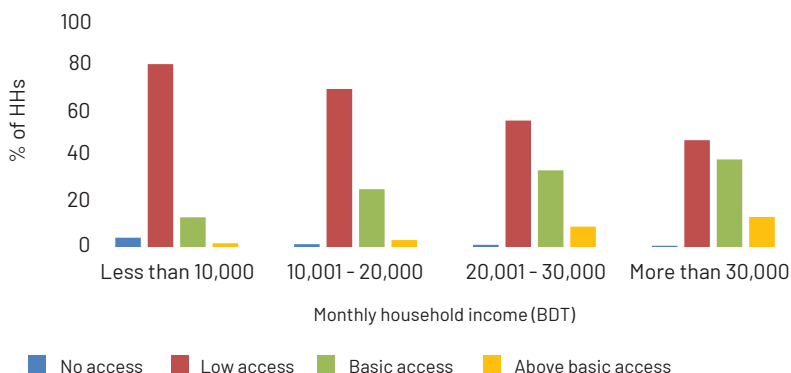
From Figure 5.4, one can observe statistically significant regional heterogeneity in the overall digital access. The rural households in Chattogram, Dhaka, and Khulna divisions have better digital access as indicated by the higher proportion of households with “above-basic” and “basic” digital access. On the other hand, households in Mymensingh, Rangpur, and Sylhet divisions have a relatively lower level of digital access.



**Figure 5.4. Digital access and regional heterogeneity (% of households)**

Pearson  $\chi^2=280.69$ , P-value = 0.000  
 Source: BIGD Digital Literacy Survey 2019

Figure 5.5 demonstrates a strong, monotonic, and statistically significant impact of income on the household’s digital access. The share of households with “basic” and “above-basic” digital access gradually increases as the income level of households increases. Similarly, the proportion of households with “no access” and “low” digital access steadily decreases as the income level of households increases. However, even within the highest income bracket (more than BDT 30,000 monthly income), almost half of households have below “basic” digital access.



**Figure 5.5. Income disparity and digital access**

Pearson , P-value = 0.000;

Source: BIGD Digital Literacy Survey 2019

#### 5.1.4. Determinant Analysis of Overall Digital Access

A determinant analysis of the overall digital access was performed using a logistic regression framework.

The dummy dependent variable,  $DA_{dummy}$ , is derived by merging the four access classifications of households, as shown in Figure 5.3, to create 0= “below basic” and 1= “basic and above” groups of households in the following way:

$$DA_{dummy} = \begin{cases} = 0, & \text{if the household falls under “No Access” or “Low Access”} \\ = 1, & \text{if the household falls under “Basic or “Above basic”} \end{cases}$$

The frequency distribution of  $DA_{dummy}$  is presented in Table 5.1.

**Table 5.1. Frequency distribution of digital access dummy dependent variable ( $DA_{dummy}$ )**

Digital access	Frequency	Percentage
Below basic access	4,796	73.78
Basic or above access	1,704	26.22
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

We conceptualize the household's digital access as a function of household-level variables (household size, income), household head's characteristics (age, education, gender, literacy, employment), and the geographic location of the household. The summary statistics of the independent variables are provided in Annexe Table A. 2.1. Table 5.2 displays the results obtained from the logistic regression that include the regression coefficient, odds ratio, and marginal effect.

Evidence in favour of significant regional heterogeneity is found. On average, the probability of having "basic and above" digital access is approximately 12-13 percentage point higher for the people of Khulna, Chattogram, and Dhaka divisions compared to the people of Rangpur division (base category), *ceteris paribus*.

**Table 5.2. Determinant analysis of digital access: Results from a logistic regression**

Factors	Coef.(SE)	Odds ratio	% Change in odds ratio	Average marginal effect
Constant	-2.008 (0.161)***			
Division (Base: Rangpur)				
Barisal	0.208 (0.142)	1.23	23.1	0.033 (0.023)
Chattogram	0.680 (0.116)***	1.97	97.4	0.120 (0.020)***
Dhaka	0.668 (0.111)***	1.95	95.0	0.118 (0.019)***
Khulna	0.720 (0.118)***	2.05	105.5	0.128 (0.021)***
Mymensingh	-0.086 (0.152)	0.92	-8.2	-0.013 (0.022)
Rajshahi	0.119 (0.123)	1.13	12.6	0.018 (0.019)
Sylhet	-0.161 (0.159)	0.85	-14.8	-0.023 (0.022)
Monthly household income (Base: up to BDT 10,000)				
Low (BDT 10,001 to 20,000)	0.678 (0.072)***	1.97	97.1	0.112 (0.012)***

[ Table 5.. contd... ]

[ ...Table 5.2. contd ]

Factors	Coef.(SE)	Odds ratio	% Change in odds ratio	Average marginal effect
Medium (BDT 20,001 to 30,000)	1.101 (0.100)***	3.01	200.9	0.201 (0.020)***
High (More than BDT 30,000)	1.385 (0.128)***	3.99	299.5	0.265 (0.028)***
Household size (Base: up to 4 members)				
More than 4 members	0.324 (0.064)***	1.38	38.2	0.058 (0.011)***
Gender (Household head, Base: Female)				
Male	-0.086 (0.132)	0.92	-8.3	-0.015 (0.024)
Literacy (Household head, Base: Illiterate)				
Literate	0.195 (0.071)***	1.22	21.6	0.034 (0.012)***
Education (Household head, Base: Below SSC)				
Above SSC	0.440 (0.079)***	1.55	55.3	0.081 (0.015)***
Employment status (Household head, Base: Unemployed)				
Employed	-0.235 (0.124)*	0.79	-20.9	-0.042 (0.023)*
Age (Household head)	-0.001 (0.002)	1.00	-0.1	0.000 (0.000)

Notes: N=6500, \*\*\* P<0.01 \*\* P<0.05 \* P<0.10, LR test and p-value (627.53 and .000), Pseudo R<sup>2</sup> = 0.084, % correctly specified, sensitivity and specificity 74% Area under the ROC curve=0.699

Source: BIGD Digital Literacy Survey 2019

Household income has a strong, significant, and increasing impact on having better digital access. The probability of “basic and above” digital access, on average, is 27, 20, and 11 percentage point times higher for the high, medium, and low-income groups, respectively, than that of the poorest group (base category). This indicates that a reduction of the cost of digital access will help poor households to have better digital access.

Household size has a significant positive impact on digital access.

Predictably, literacy and education of household head have a significant and positive impact on digital access. For the households with the head having above SSC education status, the probability of “basic and above” digital access, on average, is 8 percentage point higher compared to the households with the head having below SSC education.

Interestingly and counterintuitively, the employment status of the household head has a significant (at a 10% significance-level) negative impact on digital access.

However, the gender and age of the household head do not have any significant effect on better digital access.

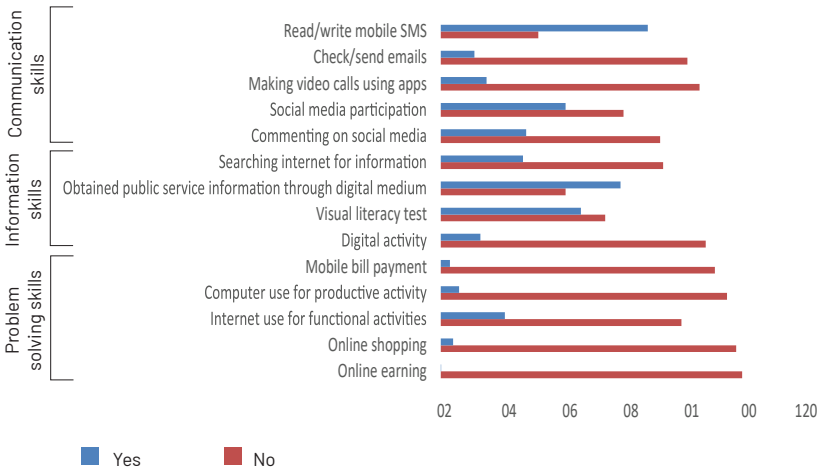
## 5.2. Digital Skills: Analysis and Results

For computing the DLI, the digital skills dimension will include 14 indicators under the domains of communication skills, information skills, and problem- solving skills. These are: (i) reading/writing mobile SMS, (ii) checking/sending emails, (iii) making video calls using apps, (iv) social media participation, (v) commenting on social media, (vi) searching the internet for information, (vii) obtaining public service information through digital media, (viii) visual literacy activity, (ix) digital activity, (x) mobile bill payment, (xi) computer use for productive activities, (xii) internet use for functional activities, (xiii) online shopping, and (xiv) online earning.

Figure 5.6 displays the frequency distribution of these 14 digital skills indicators, all of which are dummy. The information domain contains four, and communication and problem-solving domains each contain five key indicators under them. In the communication skills domain, it is found that among the respondents, 68% can read/write mobile SMS, 10% can check/send emails, 15% can make video calls, 41% participate in the social media, and 28% can comment on social media. Meanwhile, the key indicators for information skills reveal that among the respondents, 27% search internet for information, 59% obtain public service related information through digital media. Moreover, 46% of the respondents under this domain passed at least one out of five visual literacy test and 13% passed at least one digital activity test (out of three browsing tests). Finally, for the problem-solving skills domain, we found that 3% of

the respondents pay bills via mobile, 6% use computers for productive activities (i.e. searching for information, earning, and typing practice), 20% use the internet for functional activities (i.e. reading news, online training, bill payments, and searching information online), 3% have online shopping experience, and less than 1% earn through online activities.

From the above frequency analysis of domain-wise indicators, it is evident that, in general, communication is the strongest digital skillset of rural households in Bangladesh, while problem-solving skills are at a very low level among these three domains.



**Figure 5.6. Digital skills: Frequency distribution (%) of key indicators**

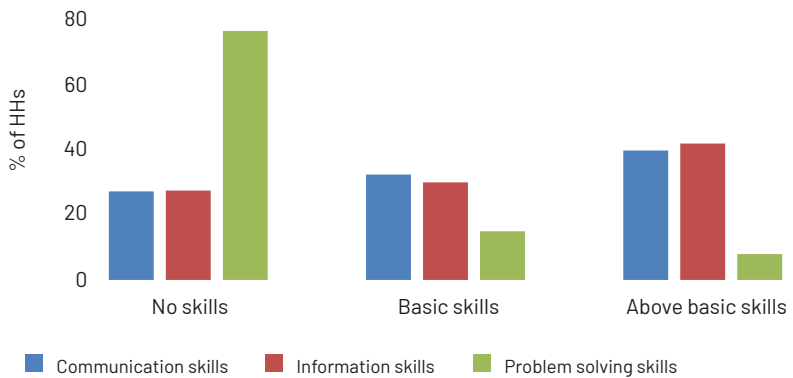
Note:

1. Internet use for functional activities includes reading news, online training, bill payments, and searching for information online.
2. Computer use for productive activities includes searching for information, earning, and typing practice.
3. Digital activity is a derived dummy variable from the three practical browsing tasks (see Chapter 2 and Chapter 4), and takes the value of 1 if the respondent could successfully perform at least one task.
4. Visual literacy is another derived dummy variable from the five photo-visual tests (see Chapter 2 and Chapter 4), and takes value 1 if the respondent could successfully pass at least one test.
5. Both checking/sending emails and reading/writing mobile SMS indicators are derived by merging two questions and they take the value of 1 if the respondent is able to perform at least one of these two activities.
6. Digital media include the internet, social media, television, and radio.

Source: BIGD Digital Literacy Survey 2019

### 5.2.1. Domain-level Analysis

Figure 5.7 displays the household groups following the domain classification rule defined in section 5.1.<sup>11</sup>Households display a similar pattern of communication skills and information skills. Interestingly, for these two domains “above-basic skills” category holds the highest proportion of household. However, the grouping of household under the problem-solving domain depicts a different picture entirely. A high proportion (77%) of households have no problem-solving skills, 15% have “basic” skills, and only 8% have “above-basic” skills.



**Figure 5.7. Household classification (%) in terms of domain-level digital skills.**

Note: The Spearman’s rank correlation between the household classifications determined by these three domains provide evidence of a significant positive association between them, which is particularly strong between the classifications achieved by information and communication domains (0.61), see Annexe Table A. 2.3.

Source: BIGD Digital Literacy Survey 2019

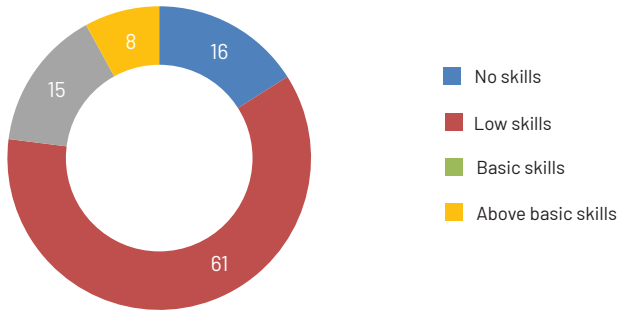
### 5.2.2. Dimension-level Analysis

The household classification in terms of the overall (dimension-level) digital skills is presented in Figure 5.8, following the dimension classification criteria described in Table 4.2. Survey data shows that in

<sup>11</sup>See Annexe Figure A. 2.3 for the frequency distribution of domain-level raw scores for digital skills dimension



terms of overall digital skills, two-third of the households are categorized as “low skills”. Whilst 16% of the households have “no skills”, 15% of households have “basic skills”, and 8% of households have “above-basic skills”.



**Figure 5.8. Household classification (%) in terms of overall digital skills**

Source: BIGD Digital Literacy Survey 2019

### 5.2.3. Digital Access and Digital Skills: How are They Related?

Intuitively, a higher level of access to digital devices and internet is instrumental in creating digitally skilled individuals and communities. Low-level digital access is a key indicator of the digital divide that may lead to none or very low level of digital skills, further escalating the digital divide. At this point, it will be interesting and insightful to perform an exploratory analysis on the relationship between the digital access and digital skills status of households. We can investigate this by analyzing two ordinal variables defined by the classifications of households determined by these two dimensions of the DLI.

First, highly significant evidence of positive association is observed by the Spearman’s rank correlation (0.51) between them. Secondly, the cross-tabulation analysis between the two classifications presented in Table 5.3. Highly significant Pearson’s statistic to test the association between them confirms that the two variables are related.

In general, it is found that the share of households with a higher level of digital skills increases, as the level of digital access increases. Level of

access matches the level of skills in the sense households with above-basic skills level are also those with above-basic access level. More importantly, there is no mismatch in levels, that is, no household with “above-basic” digital access status has been categorized as “no skills”; while no household from “no access” qualifies as having “above-basic” digital skills. These findings clearly indicate that ensuring at least “basic access” to all domains (mobile, computer, and internet) for the rural people is a prerequisite to achieving an acceptable standard of digital skills.

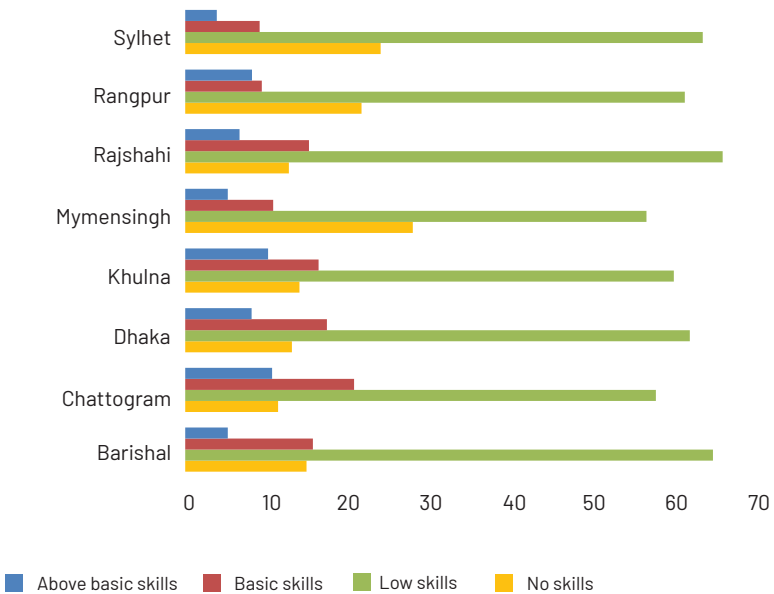
**Table 5.3. Cross-tabulation of digital access and digital skills**

Classification by digital access		Classification of overall digital skills				Total
		No skills	Low skills	Basic skills	Above-basic skills	
No access	Frequency	102	46	1	0	149
	Row %	68.46	30.87	0.67	0.00	100.00
	Column %	9.72	1.16	0.10	0.00	2.29
Low access	Frequency	930	3184	469	64	4647
	Row %	20.01	68.52	10.09	1.38	100.00
	Column %	88.66	80.14	48.20	12.67	71.49
Basic access	Frequency	17	731	452	260	1460
	Row %	1.16	50.07	30.96	17.81	100
	Column %	1.62	18.40	46.45	51.49	22.46
Above-basic access	Frequency	0	12	51	181	244
	Row %	0.00	4.92	20.90	74.18	100.00
	Column %	0.00	0.30	5.24	35.84	3.75
Total	Frequency	1049	3973	973	505	6500
	Row %	16.14	61.12	14.97	7.77	100.00
	Column %	100.00	100.00	100.00	100.00	100.00

Pearson  $\chi^2=2900$ , P-value = 0.000; Spearman’s Rank Correlation = 0.5144 (p-value = 0.00)  
Source: BIGD Digital Literacy Survey 2019

### 5.2.3. Regional Heterogeneity, Income Disparity, and Digital Skills

As a logical consequence of the preceding analysis, we observe a qualitatively similar pattern between digital skills and digital access classification both in terms of regional heterogeneity and income disparity. From Figure 5.9, we can see that the rural households in Chattogram, Dhaka, and Khulna divisions possess higher digital skills as indicated by the higher proportion of households with “above-basic” and “basic” digital skills. While households in Mymensingh, Rangpur, and Sylhet divisions have a relatively lower level of digital skills. Pearson’s test provides evidence of significant regional heterogeneity.



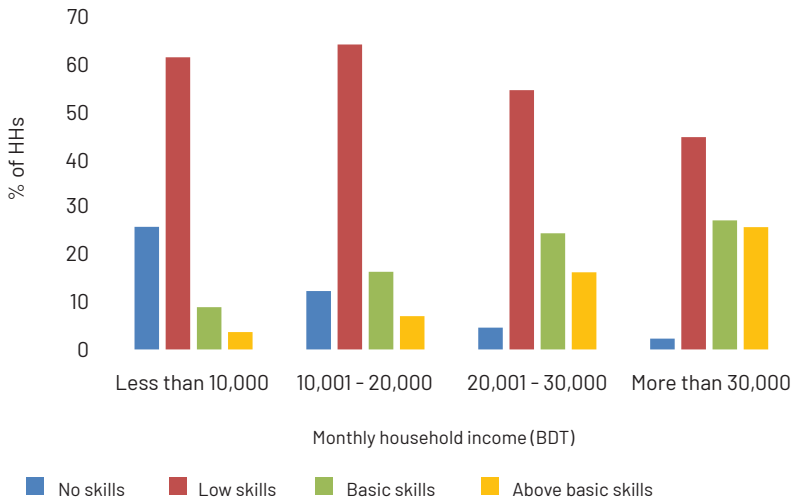
**Figure 5.9. Digital skills and regional heterogeneity (% of households)**

Pearson  $\chi^2=217.90$ , P-value = 0.000

Source: BIGD Digital Literacy Survey 2019

Figure 5.10 demonstrates a strong and statistically significant association between household income and household’s digital skills level. The percentage of rural households with “basic” and “above-basic” digital skills gradually increases as the household income level

increases. One-quarter of the households from the highest income group is categorized as having “above-basic” digital skills. However, even within this income bracket, almost half of the households are classified as below basic digital skills. Similarly, the proportion of households with “no skills” and “low skills” steadily decreases with the rise of household income level.



**Figure 5.10. Income disparity and digital skills**

Pearson  $\chi^2=714.46$ , P-value = 0.000  
 Source: BIGD Digital Literacy Survey 2019

### 5.2.4. Determinant Analysis of Overall Digital Skills

To perform the logistic regression framework for the determinant analysis of digital skills, the binary dependent variable, DSdummy, is derived by merging the four skills classification of households, as shown in Figure 5.11, to create 0 = “below basic” and 1 = “basic and above” groups of households in the following way:

$$DS_{dummy} = \begin{cases} = 0, & \text{if the household categorized as “No Skills” or “Low Skills”} \\ = 1, & \text{if the household categorized a “Basic or “Above basic”} \end{cases}$$

The frequency distribution of DSdummy is displayed in Table 5.4.

**Table 5.4. Frequency distribution of digital skills dummy dependent variable (DS<sup>dummy</sup>)**

Digital skills	Frequency	Percentage
Below basic digital skills	5,022	76.26
Basic or above digital skills	1,478	22.74
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

The household's digital skills status is hypothesized as a function of household's level of digital access, household-level variables (household size, income), household head's characteristics (literacy), MDAP's characteristics (age, gender, education, literacy, employment), and the geographic location of the household. This specification includes only the literacy of the household head because it is the MDAP whose socio-demographic features should have an impact on digital skills. The summary statistics of the independent variables

are provided in Annexe Table A. 2.1. Table 5.5 presents the results from the logistics regression containing many important results with policy significance. Positive and statistically significant effect of digital access on digital skills is found. On average, the probability of having "basic and above" digital skills is approximately 17 percentage point higher for "basic and above" digital access households compared to the households with "below basic" access.

Household's economic status has significantly positive, though relatively smaller impact, compared to the digital access analysis, on the chance of having better digital skills. The probability of "basic and above" digital access, on average, is 15, 9, and 3 percentage points times higher for the high, medium, and low-income groups, respectively, than that of the poorest group (base category).

However, the household size does not have any significant impact on digital skills, whereas a significant positive impact of household head's literacy on digital skills has been found.

A substantial geographical disparity is found and, keeping everything fixed, the probability of superior digital skills status of a rural household from Chattogram, Barisal, Khulna, and Dhaka divisions is higher, albeit lower compared to the digital access determinant analysis, relative to the households of Rangpur division.

Statistically significant gender inequality is found in favour of the male MDAP. The probability of a household to be classified as “basic and above” is, on average, 13 percentage point higher when the MDAP in that household is male.

Education and literacy of the MDAP within the household have a significant positive impact on digital skills. If the MDAP has above SSC education status, the probability of being classified as “basic and above” skills, on average, is 18 percentage point higher compared to the base category (below SSC).

It has been found that better digital skills status is more common if the MDAP within the household is unemployed. However, the average age of the unemployed MDAP (27.4 years) is about 12 years less than the employed MDAP (39.4 years). It has also been found that the age of the MDAP within the household has a significant negative impact on having better digital skills. Thus, one possible explanation behind observing better digital skills among the unemployed group is that they are comparatively younger than the employed group.

**Table 5.5. Determinant analysis of digital skills: Results from a logistic regression**

Factors	Coef. (SE)	Odds ratio	% Change in odds ratio	Average marginal effect
Constant	-3.327(0.269)***			
Digital access (Base: Below basic access)				
Basic or above access	1.408(0.080)***	4.089	308.942	0.171(0.011)***
Division (Base: Rangpur)				
Barisal	0.366(0.182)**	1.442	44.199	0.037(0.019)**
Chattogram	0.552(0.150)***	1.737	73.734	0.057(0.015)***
Dhaka	0.309(0.142)**	1.362	36.167	0.031(0.014)**
Khulna	0.333(0.151)**	1.395	39.510	0.033(0.015)**
Mymensingh	0.281(0.187)	1.325	32.451	0.028(0.019)
Rajshahi	0.218(0.150)	1.244	24.386	0.022(0.015)
Sylhet	-0.182(0.210)	0.833	-16.669	-0.017(0.020)
Monthly household income (Base: up to BDT 10,000)				
Low (BDT 10,001 to 20,000)	0.339(0.096)***	1.403	40.343	0.034(0.009)***

[ Table 5.5. contd... ]

[ ...Table 5.5. contd ]

Medium (BDT 20,001 to 30,000)	0.901 (0.130)***	2.463	146.310	0.097 (0.014)***
High (More than BDT 30,000)	1.341 (0.161)***	3.825	282.454	0.150 (0.019)***
Household size (Base: up to 4 members)				
More than 4	0.128 (0.082)	1.137	13.711	0.013 (0.008)
Literacy (Household head, Base: Illiterate)				
Literate	0.417 (0.091)***	1.518	51.790	0.042 (0.009)***
Gender (Most Digitally Able, Base: Female)				
Male	1.294 (0.101)***	3.647	264.668	0.131 (0.010)***
Literacy (Most Digitally Able, Base: Illiterate)				
Literate	1.001 (0.213)***	2.720	172.039	0.094 (0.018)***
Education (Most Digitally Able, Base: Below SSC)				
Above SSC	1.599 (0.088)***	4.950	394.968	0.181 (0.010)***
Employment Status (Most Digitally Able, Base: Unemployed)				
Employed	-0.340 (0.112)***	0.711	-28.856	-0.035 (0.012)***
Age (Most Digitally Able)	-0.063 (0.005)***	0.939	-6.077	-0.006 (0.0004)***

Notes: Most Digitally Able means the MDAP within the household; N=6497, \*\*\* p<0.01 \*\* p<0.05 \* p<0.10, LR test and p-value (2751.55 and .000), Pseudo R2 = 0.395; % correctly specified, sensitivity and specificity 85% Area under the ROC curve=0.899; Source: BIGD Digital Literacy Survey 2019



## 5.3. Digital Literacy Index: Analysis and Results

### 5.3.1. DLI Distribution

The frequency distribution and the summary statistics of the DLI are presented in Figure 5.11. Since the composite DLI is a normalized score, by definition the minimum and maximum value are 0.0 and 1.0. The mean DLI score is 0.342 and the median DLI score is 0.25. From the histogram and Gaussian kernel density, it is evident that DLI is a bimodal distribution, indicating that there are two different types of households in terms of digital literacy; one peak is observed between DLI scores of 0.14 and 0.18 while the second peak is observed between DLI scores of 0.54 and 0.60. The distribution is skewed to the right and platykurtic (i.e. flatter than the Gaussian distribution).

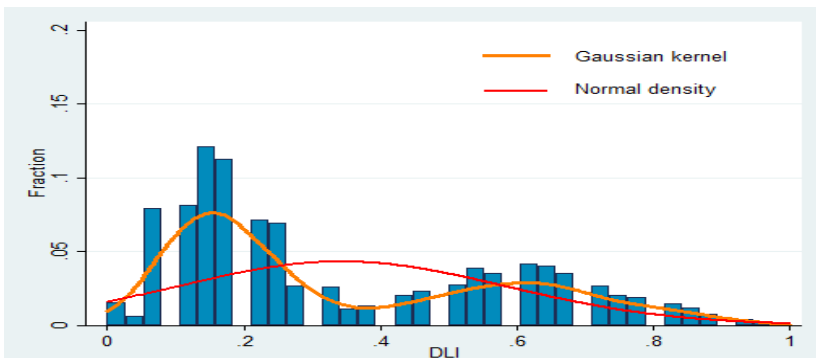


Figure 5.11. Distribution of composite digital literacy index

Note: Mean: 0.342, SD: 0.243, Median 0.25, Min: 0.00, Max: 1.00, Skewness: 0.64, Kurtosis: 2.09, Obs: 6500

Source: BIGD Digital Literacy Survey 2019

To obtain further insight, summary statistics of four quartiles of the DLI scores are provided in Table 5.6. The number of observations in the second quartile is the lowest. The range (i.e. maximum-minimum) for the first two quartiles are narrower compared to that of the last two quartiles. The three mean differences between the successive quartiles are all statistically significant.

**Table 5.6. Summary statistics of four quartiles of the DLI scores**

Quartiles of DLI	N	Mini- mum	Maxi- mum	Median	SD	Sum	Mean	Mean differences of suc- cessive quartiles
1 <sup>st</sup>	1938	0.000	0.143	0.107	0.039	202.536	0.105	
2 <sup>nd</sup>	1337	0.143	0.250	0.179	0.024	262.143	0.196	(2 vs 1) = 0.091*
3 <sup>rd</sup>	1604	0.250	0.571	0.393	0.111	629.571	0.393	(3 vs 2) = 0.197*
4 <sup>th</sup>	1621	0.571	1.000	0.679	0.096	1130.393	0.697	(4 vs 3) = 0.304*
Total	6500	0.000	1.000	0.250	0.243	2224.643	0.342	

\* p-value <0.10

### 5.3.2. Regional Heterogeneity, Income Disparity, and Overall Digital Literacy

By looking at the Boxplot of DLI by region in Figure 5.12, we can see a significant regional variation in DLI scores both in terms of median value and interquartile range. The median DLI score for the Chattogram division is considerably higher than all other divisions.

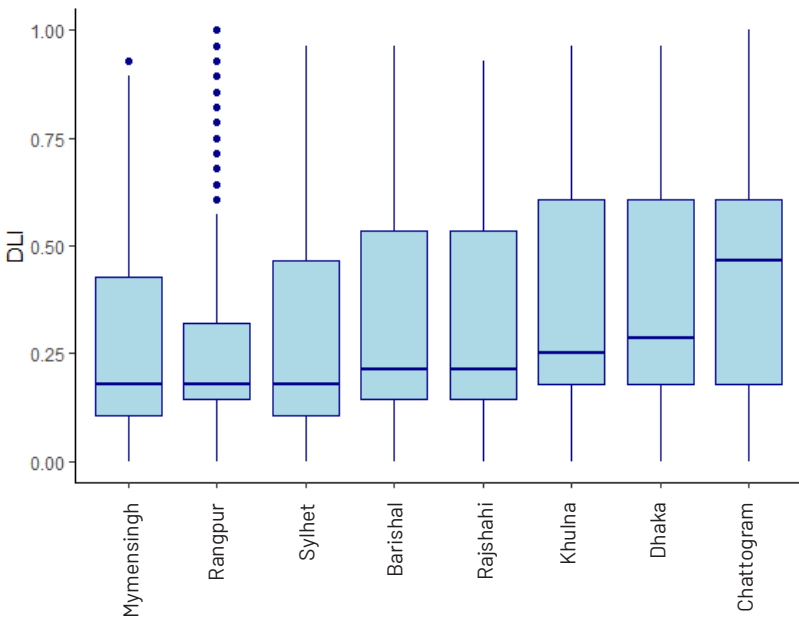
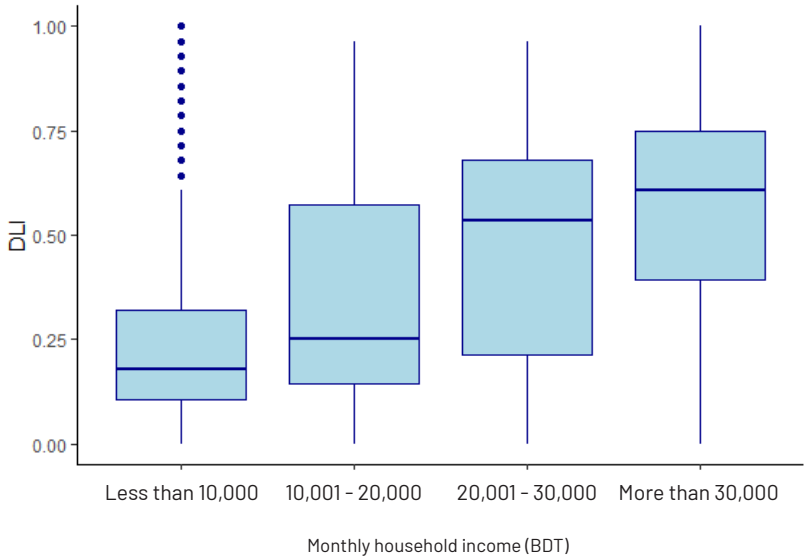


Figure 5.12. Box plot of digital literacy index (DLI) by division

Source: BIGD Digital Literacy Survey 2019

Next, the Boxplot of DLI by household monthly income (see Figure 5.13) reveals substantial income disparity in DLI scores. The median DLI score increases as the household income grows.



**Figure 5.13. Box Plot of digital literacy index (DLI) by household income**

Source: BIGD Digital Literacy Survey 2019

### 5.3.3. Determinant Analysis of Overall Digital Literacy

The dummy variable,  $DLI_{dummy}$ , is constructed to categorize households into “below average” and “above average” digital literacy in the following way:

$$DS_{dummy} = \begin{cases} = 0 \text{ (Below average),} & \text{if } DLI_i^{composite} > \text{median}(DLI_i^{composite}) \\ = 1 \text{ (Above average),} & \text{if } DLI_i^{composite} \geq \text{median}(DLI_i^{composite}) \end{cases}$$

The frequency distribution of  $DLI_{dummy}$  is displayed in Table 5.7.

**Table 5.7. Frequency distribution of digital literacy dummy  $DLI_{dummy}$**

Digital literacy	Frequency	Percentage
Below average digital literacy	3,163	48.66
Average and above digital literacy	3,337	51.34
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

Recall that the DLI scores are normalized aggregation of digital access and digital skills of a household. The household’s digital literacy status is therefore hypothesized as a function of household-level variables (household size, income), household head’s characteristics (gender, age and literacy), MDAP’s characteristics (age, gender, education, literacy, employment), and the geographic location of the household. The summary statistics of the independent variables are provided in Annexe Table A. 2.1. Table 5.8 reports the results of the logistic regression.

The average marginal effect shows that compared to Rangpur division, the probability of “above average” digital literacy is significantly higher for the households of all other divisions, this is particularly high for Chattogram, Dhaka, and Khulna.

Household’s economic status has a strong, significant, and positive impact on its digital literacy status. The probability of “average and above” digital literacy, on average, is 25, 17, and 7 percentage point times higher for the high, medium, and low-income groups, respectively, than that of the poorest group (base category).

Both education and literacy of the MDAP have been identified as critical and significant determinants of the household’s digital literacy. If the MDAP has above SSC education status (literate), the probability of “average and above” digital literacy is, on average, 19 percentage point (15 percentage point) higher compared to the respective base categories.

Interestingly, female-headed households are more likely (11 percentage point higher) to have better digital literacy. On the other hand, households with male MDAP have, on average, 17 percentage point higher probability of achieving a better digital literacy status compared to the base category.

Household size and the literacy of the household head also demonstrate a significant positive impact on digital literacy. Age of the household head shows positive impact while the age of the most digitally able person shows a negative impact on the household's digital literacy.

Finally, similar to the earlier two determinant analyses, the employment status of the household head (digital access) and most digitally able person(digital skills)has a negative significant impact on the household's digital literacy status. The justification of these findings follows from the previous discussion.

**Table 5.8. Determinant analysis of Digital Literacy: Results from a logistic regression**

Factors	Coefficient	Odds ratio	% Change in odds ratio	Marginal effect
Constant	-0.528 (0.185)***			
Division (Base: Rangpur)				
Barisal	0.698 (0.146)***	2.0088	100.9	0.102 (0.021)***
Chattogram	1.198 (0.128)***	3.3124	231.2	0.175 (0.018)***
Dhaka	1.123 (0.117)***	3.0735	207.4	0.164 (0.017)***
Khulna	0.912 (0.125)***	2.4888	148.9	0.134 (0.018)***
Mymensingh	0.400 (0.145)***	1.4913	49.1	0.059 (0.021)***
Rajshahi	0.520 (0.121)***	1.6828	68.3	0.076 (0.018)***
Sylhet	0.504 (0.153)***	1.6554	65.5	0.074 (0.022)***

Factors	Coefficient	Odds ratio	% Change in odds ratio	Marginal effect
Monthly household income (Base: up to BDT 10,000)				
Low (BDT 10,001 to 20,000)	0.482 (0.073)***	1.6188	61.9	0.073 (0.011)***
Medium (BDT 20,001 to 30,000)	1.154 (0.124)***	3.1696	217	0.173 (0.018)***
High (More than BDT 30,000)	1.687 (0.189)***	5.4052	440.5	0.246 (0.025)***
Household size (Base: up to 4 members)				
More than 4	0.208 (0.072)***	1.231	23.1	0.030 (0.010)***
Gender (Household head, Base: Female)				
Male	-0.747 (0.104)***	0.4736	-52.6	-0.106 (0.014)***
Age (Household head)	0.014 (0.003)***	1.0142	1.4	0.002 (0.000)***
Literacy (Household head, Base: Illiterate)				
Literate	0.374 (0.093)***	1.4542	45.4	0.055 (0.014)***
Gender (Most Digitally Able, Base: Female)				
Male	1.233 (0.110)***	3.4316	243.2	0.172 (0.014)***
Age (Most Digitally Able)	-0.081 (0.003)***	0.9224	-7.8	-0.012 (0.000)***
Literacy (Most Digitally Able, Base: Illiterate)				
Literate	0.943 (0.113)***	2.5688	156.9	0.147 (0.019)***
Education (Most Digitally Able, Base: Below SSC)				
Above SSC	1.204 (0.075)***	3.3333	233.3	0.192 (0.013)***
Employment status (Most Digitally Able, Base: Unemployed)				
Employed	-0.223 (0.113)**	0.7999	-20	-0.032 (0.017)**

Most Digitally Able means the Most Digitally Able person within the household N=6497, \*\*\* P<0.01 \*\* P<0.05 \* P<0.10, LR test and p-value (3244.56 and .000), Pseudo R2 = 0.360; % correctly specified, sensitivity and specificity 79% Area under the ROC curve=0.875

Source: BIGD Digital Literacy Survey

## 6. Conclusion

This chapter presents key findings from this study, starting with the descriptive statistics on digital literacy, followed by the digital literacy index (DLI), as formulated by BIGD.

### 6.1. Descriptive Statistics

#### Digital access

- It can be seen that though about 96% of the households use mobile phones, the majority of them (59%) do not have access to a smartphone.
- Only 8% of the households use computers; computer ownership is even lower (2.4%).
- About 46% of the households are aware of the internet, 37% have internet connectivity (either broadband or mobile data or both), and 33% use the internet at least once a week.
- Access and ownership of mobile phones are over 85% across all divisions. Dhaka has the highest mobile access (97%) and mobile ownership (95%).
- Chattogram division ranks the highest in both smartphone access (58%) and ownership (55%), while Rangpur ranks lowest where only 21% of the households have smartphone access and 20% own smartphones.
- Similarly, Chattogram also has the highest internet access, whereas Rangpur has the lowest.

#### Digital skills

- Under the communication skills domain, it is found that 68% of the respondents can read/write mobile SMS, 10% can check/send emails, 15% can make video calls, 41% participate in the social media, and 28% can make comments on social media.
- The key indicators for information skills reveal that 27% of the respondents search the internet for information, while 59% obtain



public service related information through digital media. Moreover, 46% of the respondents passed our visual literacy test by completing at least one out of five tasks and 13% passed at least one digital activity test (out of the three browsing tests).

- For the problem-solving skills domain, 3% of the respondents pay bills via mobile phones, 6% use computers for productive activities (e.g. searching for information, earning, and typing practice), 20% use the internet for functional activities (e.g. reading news, online training, bill payments, and searching information online), 3% have online shopping experience, and less than 1% earn through online activities.
- In terms of communication skills, it is found that regionally, households in Chattogram and Khulna divisions have high communications skills. For example, 63% of the households in Chattogram and 42% households in Khulna participate in social media. Conversely, households in Mymensingh and Sylhet have the poorest communication skills, where only 30% and 36% of the households participate in social media, respectively.
- In the given three browsing tasks on the passport website, households in Chattogram, Dhaka, and Khulna divisions performed the best, while Sylhet and Rangpur performed the worst.
- Interestingly, based on the results from the visual icon identification tests, it is found that Barisal and Khulna are top performers, but once again, Sylhet is the poorest performer.

## 6.2. Digital Literacy Index (DLI)

### Household classification and exploratory analysis

- In terms of the overall digital access, almost three-quarters the households appear to have “low access” and only 4% have “above-basic” access. At the domain level, while less than 5% of households do not have access to mobile phones, half of the households do not have access to computers (49%) and the internet (54%).
- The classification of households based on their overall digital skills reveals that two-thirds of the rural households have “low skills”, 16% households have “no skills”, 15% households have “basic

skills”, and 8% households have “above-basic skills”. In the domain-level classification, communication and information skills show a similar pattern and “above-basic skills” category holds the highest proportion of households (40% to 42%). However, the grouping of households under problem-solving domain depicts an entirely different picture where 77% have “no skills” and only 8% have “above-basic skills”.

- Intuitively, higher-level access to digital devices and internet is instrumental in creating digitally skilled individuals and communities. An exploratory analysis confirms a significant and positive relationship between digital access and digital skills status of the households. In general, it is found that the share of households with a higher level of digital skills increases as the level of digital access increases.
- The DLI has a bimodal distribution, indicating that there are two different “types” of households in terms of digital literacy. Substantial differences in the four DLI quartiles are observed.
- Exploratory analyses found evidence of significant geographical heterogeneity for DLI and its two dimensions: digital access and digital skills. The rural households in Chattogram, Dhaka, and Khulna divisions possess higher digital access, digital skills, and digital literacy status, while households in Mymensingh, Rangpur, and Sylhet divisions have significantly lower levels of digital access, skills, and literacy.
- The income of a household has a strong, monotonic, and statistically significant impact on the household’s digital access, skills, and digital literacy. However, even in the highest income bracket (more than BDT 30,000 monthly income), almost half of households have “below basic” digital access and digital skills.

### **Determinant analysis of digital access, digital skills, and digital literacy**

- Digital access has a significant positive impact on the digital skills level of a household.
- Significant regional heterogeneity has been observed in all three determinant analyses.

- Strong and significant income effect on having better digital access, skills, and literacy have been confirmed.
- The gender of the household head has no significant impact on digital access; however, female-headed households are more likely to have better digital literacy. On the other hand, a male MDAP has a higher chance of achieving better digital skills and digital literacy.
- Household size has a significant positive impact on digital access and digital literacy, but not on skills.
- The age of the household head has no significant effect on digital access but have a positive impact on digital literacy. While the age of the MDAP shows a negative impact on both digital skills and digital literacy.
- The literacy and education of the household head and digitally literate person are, when included in the specification, demonstrate a significant strong positive impact on digital access, skills, and literacy.
- A counterintuitive finding is that unemployed MDAP (household head) has increased chance of achieving better digital skills and digital literacy (access). There are two possible explanations. First, it was found that the literacy level among unemployed household heads was higher, thereby leading to higher levels of digital literacy in the household. Second, it was found that the unemployed most digital literate person tend to be younger than their employed counterparts and hence their digital skills might be more up to date.

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# Annexe

## A.1. Methodology

### Sample Size

The sample size for each division or stratum has been calculated as follows:

$$n = \frac{Z_{\alpha/2}^2 * p(1-p)}{\epsilon^2} * DE,$$

Where n is the minimum level of the sample size required, r is the sample proportion,  $Z_{\alpha/2}$  is the critical value of a standard normal distribution with a% confidence level, DE is the design effect of the target variable. This survey used  $p=0.50$ ,  $\epsilon=0.05$ ,  $\alpha=0.05$ ,  $Z_{0.025}=1.96$   $DE=2.1$  to obtain  $n=384*2.1=806.4$ . Given there are 8 divisions or strata, total required sample size  $=806.4*8 = 6451$ . To round up, the sample size was set at 6,500 rural households.

The sampling frame used for this survey to select the list of Principal Sampling Units (PSUs)<sup>12</sup> was based on the Integrated Multi-Purpose Sample (IMPS) designed by the Bangladesh Bureau of Statistics (BBS). The IMPS has 1,077 PSUs in rural areas and 935 PSUs in urban. For this survey, it was decided to allot 20 households from each PSU, which meant  $6,500/20=325$  PSUs had to be selected, which were taken from the rural areas only.

325 PSUs are distributed among eight divisions (8 strata) on the basis of population proportion to size using Population and Housing census 2011, and size is defined in terms of the number of households.

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<sup>12</sup> "Primary Sampling Unit (PSU) refers to sampling units that are selected in the first (primary) stage of a multi-stage sample ultimately aimed at selecting individual elements." –Encyclopedia of Survey Research Methods, SAGE

**Table A.1.1 Allocation of PSU for Rural Bangladesh**

Division name	Number of rural PSUs in IMPS	Number of rural PSUs for the survey
Barisal	87	26
Chattogram	182	49
Dhaka	206	63
Mymensing	86	43
Khulna	131	27
Rajshahi	156	49
Rangpur	138	46
Sylhet	91	22
Total	1,077	325

### Questionnaire tool-tests

The survey questionnaire was developed based on visits from May to August 2019 to several households in rural, sub-urban areas regarding the use of e-services. The first visit was to Aminbazar in Savar in May when the structure of the questionnaire was tested out and opted for fewer open-ended questions. Next test out session was again in June in Bhakurta union under Savar. Final tool- test was conducted in August at four villages (Komolapur, Bordail, Krishnopur, Dhonuakhala) in Cumilla, where 40 households were interviewed. Based on the responses, new questions and more options for responses were included. IFPRI BHS questionnaire and HIES 2016 questionnaire were reviewed for questions on comparable variables.

### Fieldwork

A hundred candidates were selected for data collection of this survey. Twenty-five teams of enumerators were formed, including one team leader and two other members. The team leaders were responsible for supervising their teams, sample selection of households at each PSU, and also for conducting interviews. Out of the remaining enumerators, 10 candidates were assigned to conduct back-check interviews a week after the survey started.



Although the aim was to recruit an equal number of male and female enumerators, the recruiting ended up with a 2:1 male to female enumerators based on the show-up of female candidates during the recruitment process. While forming the team, it was kept in mind that no less than two women remain in a team of three members.

### **Data collection, entry, processing, and validation**

The survey data was uploaded using SurveyCTO at the end of the day from field location using a mobile internet connection. After the data was transferred to the cloud, BIGD researchers and field supervision teams could download the data on daily basis from SurveyCTO. Data management team along with researchers checked the validity of the data regularly. Preliminary data analysis in the form of high-frequency checks (HFCs) was done every three days by the data management team and one from the research teams. In case of discrepancies, individual interviewer, along with his/her team leader was provided with feedback or solutions.

Ten back-checkers were assigned to re-interview with a shortened questionnaire, giving a head-start of 5 days to the enumerators. Ten per cent of each enumerator's interviews were randomly selected and were sent for back-checking on a weekly basis.

### **Ethical consideration**

Before starting an interview, it was made mandatory to read out the purpose of the survey and then ask the household respondent if they consent to partake in the survey. The enumerators read out the section on consent to the respondents and if the respondents gave consent, their digital signature was taken before proceeding with the survey.

The enumerators took necessary precautions to ensure the privacy of the respondents during interviews. They were instructed to respect the boundary of the households and choose a location, preferably an outside area of the selected household to conduct the interviews; unless the households preferred otherwise. The enumerators described the aim of the survey and the possible duration of the interview before starting the interview. If the households were not comfortable with the duration or could not provide a suitable location at that particular time, the interviewers rescheduled another time while they were still in the area.

The anonymity of the respondents is strictly maintained in the reports. The enumerators were instructed not to probe the respondents with any sensitive information. The respondents' contact number and details were taken with consent for any possible subsequent surveys.

## A.2. Digital Literacy Index

**Table A.2.1. Summary statistics of the independent variables used in various regressions.**

	Independent variables	Mean	SD
Used in all three regression	Division (Base: Rangpur)		
	Barisal	0.080	0.271
	Chattogram	0.151	0.358
	Dhaka	0.194	0.395
	Khulna	0.132	0.339
	Mymensingh	0.083	0.276
	Rajshahi	0.151	0.358
	Sylhet	0.068	0.251
	Monthly Household Income (Base: up to BDT 10,000)		
	BDT 10,001 to 20,000	0.450	0.497
	BDT 20,001 to 30,000	0.111	0.314
	More than BDT 30,000	0.054	0.226
	Household size (Base: up to 4 members)		
	More than 4 members	0.393	0.489
	Literacy (Household head, Base: Illiterate)		
	Literate	0.511	0.500

[ Table A.2.1. contd... ]

[ ...Table A.2.1. contd ]

	Independent variables	Mean	SD
Used in digital access and digital literacy index regressions	Gender (Household head, Base: Female)		
	Male	0.829	0.376
	Age (Household head)	47.049	13.444
Used in digital skills and digital literacy index regressions	Gender (Most Digitally Able, Base: Female)		
	Male	0.631	0.483
	Literacy (Most Digitally Able, Base: Illiterate)		
	Literate	0.737	0.440
	Education (Most Digitally Able, Base: Below SSC)		
	Above SSC	0.377	0.485
	Employment status (Most Digitally Able, Base: Unemployed)		
	Employed	0.516	0.500
	Age (Most Digitally Able)	33.568	14.665
Used only in digital access regression	Education (Household head, Base: Below SSC)		
	Above SSC	0.205	0.403
	Employment status (Household head, Base: Unemployed)		
	Employed	0.818	0.386
Used only in digital skills regression	Digital access (Base: Below basic access)		
	Basic or above access	0.262	0.439

Source: BIGD Digital Literacy Survey 2019

**Table A.2.2. Digital access: Spearman's rank correlation between domain-level household classifications**

Classification determining domain	Phone	Computer	Internet
Phone	1		
Computer	0.15*	1	
Internet	0.73*	0.18*	1

Note : \* P<0.01

Source: BIGD Digital Literacy Survey 2019

**Table A.2.3. Digital skills: Spearman's rank correlation between domain-level household classifications**

Classification determining domain	Communication	Information	Problem-solving
Communication	1		
Information	0.61*	1	
Problem-solving	0.56*	0.54*	1

Note : \* P<0.01

Source: BIGD Digital Literacy Survey 2019

**Table A.2.4. Digital access: Frequency distribution (%) of key indicators (n=6,500).**

Domain	Indicator	No	Yes
Mobile	Mobile phone usage	4.15	95.85
	Access to smartphone	58.92	41.08
Computer	Computer usage	91.54	8.46
	Access to village computer shop	53.22	46.78
Internet	Aware of internet	53.72	46.28
	Internet connectivity	63	37
	Weekly internet usage	67.2	32.8

Source: BIGD Digital Literacy Survey 2019

**Table A.2.5. Digital access: Frequency distribution (%) of domain-level raw scores**

Score	Phone access	Computer access	Internet access
0	4.15	49.34	53.72
1	54.77	46.08	9.28
2	41.08	4.58	4.20
3			32.80

Source: BIGD Digital Literacy Survey 2019

**Table A.2.6. Household classification (%) in terms of domain-level digital access**

Domain-level classification	Phone access	Computer access	Internet access
No access	4.15	49.34	53.72
Basic access	54.77	46.08	9.28
Above-basic access	41.08	4.58	37.00

Source: BIGD Digital Literacy Survey 2019

**Table A.2.7. Household classification (%) in terms of overall digital access**

Overall digital access	Percentage
No access	2.29
Low access	71.49
Basic access	22.46
Above-basic access	3.75

Source: BIGD Digital Literacy Survey 2019

**Table A.2.8. Digital access and regional heterogeneity  
(% of households)**

Division	No access	Low access	Basic access	Above-basic access
Barisal	2.12	75.77	18.65	3.46
Chattogram	2.45	59.59	32.65	5.31
Dhaka	0.95	65.56	29.05	4.44
Khulna	1.4	65.81	27.33	5.47
Mymensingh	2.59	82.04	13.52	1.85
Rajshahi	1.84	78.16	17.24	2.76
Rangpur	3.37	79.57	14.35	2.72
Sylhet	6.14	76.36	15.45	2.05

Pearson  $\chi^2=280.69$  , P-value = 0.000  
Source: BIGD Digital Literacy Survey 2019

**Table A.2.9. Income disparity and digital access**

Monthly household income (BDT)	No access	Low access	Basic access	Above-basic access
Less than 10,000	4.11	81.01	13.2	1.68
10,001 to 20,000	1.27	70.04	25.61	3.08
20,001 to 30,000	0.97	56.05	33.94	9.04
More than 30,000	0.57	47.31	38.81	13.31

Pearson  $\chi^2=509.58$  , P-value = 0.000  
Source: BIGD Digital Literacy Survey 2019

**Table A.2.10. Digital skills: Frequency distribution (%) of key indicators (n=6,500)**

Domain	Indicator	No	Yes
Communication skills	Read/write mobile SMS	31.77	68.23
	Check/send emails	89.71	10.29
	Making video calls using apps	84.65	15.35
	Social media participation	59.49	40.51
	Commenting on social media	72.15	27.85
Information skills	Searching internet for information	72.89	27.11
	Obtained public service information through digital medium (internet, social media, television, and radio)	40.88	59.12
	Visual literacy test	53.88	46.12
	Digital activity	86.95	13.05
Problem-solving skills	Mobile bill payment	96.57	3.43
	Computer use for productive activity	93.89	6.11
	Internet use for functional activities	79.4	20.6
	Online shopping	96.52	3.48
	Online earning	99.43	0.57

Source: BIGD Digital Literacy Survey 2019

**Table A.2.11. Digital skills: Frequency distribution (%) of domain-level raw scores**

Score	Communication skills	Information skills	Problem-solving skills
0	27.40	27.66	76.98
1	32.58	30.17	15.03
2	10.06	21.06	5.60
3	14.80	11.32	1.72
4	10.65	9.78	0.52
5	4.51	0.00	0.14

Source: BIGD Digital Literacy Survey 2019

**Table A.2.12. Household classification (%) in terms of domain-level digital skills**

Domain-level classification	Communication skills	Information skills	Problem-solving skills
No skills	27.40	27.66	76.98
Basic skills	32.58	30.17	15.03
Above-basic skills	40.02	42.17	7.98

Source: BIGD Digital Literacy Survey 2019

**Table A.2.13. Household classification (%) in terms of overall digital skills**

Overall digital skills	Percentage
No skills	16.14
Low skills	61.12
Basic skills	14.97
Above-basic skills	7.77

Source: BIGD Digital Literacy Survey 2019

**Table A.2.14. Digital skills and regional heterogeneity (% of households)**

Division	No skills	Low skills	Basic skills	Above-basic skills
Barisal	14.81	64.42	15.58	5.19
Chattogram	11.33	57.45	20.61	10.61
Dhaka	13.02	61.59	17.30	8.10
Khulna	13.95	59.65	16.28	10.12
Mymensingh	27.78	56.3	10.74	5.19
Rajshahi	12.65	65.61	15.1	6.63
Rangpur	21.52	60.98	9.35	8.15
Sylhet	23.86	63.18	9.09	3.86

Pearson  $\chi^2=217.90$ , P-value = 0.000

Source: BIGD Digital Literacy Survey 2019



**Table A.2.15. Income disparity and digital skills.**

Monthly household income (BDT)	No skills	Low skills	Basic skills	Above-basic skills
Less than 10,000	25.85	61.59	8.9	3.67
10,001 to 20,000	12.32	64.29	16.36	7.02
20,001 to 30,000	4.59	54.66	24.48	16.27
More than 30,000	2.27	44.76	27.20	25.78

Pearson  $\chi^2=714.46$  , P-value = 0.000

Source: BIGD Digital Literacy Survey 2019

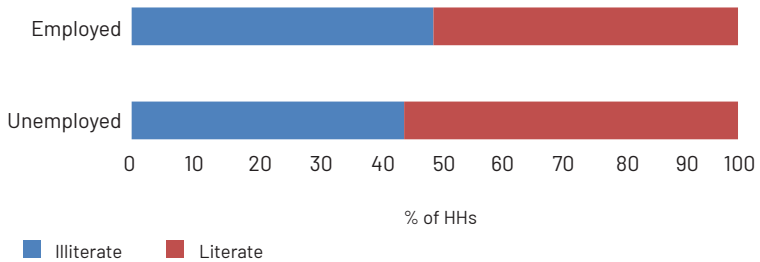
**Table A.2.16. Regional distribution of monthly household income**

Division	Monthly household income (BDT)			
	Less than 10,000	10,001 to 20,000	20,001 to 30,000	More than 30,000
Barisal	41.35	50.77	6.15	1.73
Chattogram	19.39	49.69	20.82	10.1
Dhaka	33.17	42.86	14.84	9.13
Khulna	37.33	47.21	10.7	4.77
Mymensingh	55.56	36.11	6.11	2.22
Rajshahi	39.8	48.16	8.06	3.98
Rangpur	56.3	39.96	4.78	1.96
Sylhet	35.23	49.32	10.91	4.55

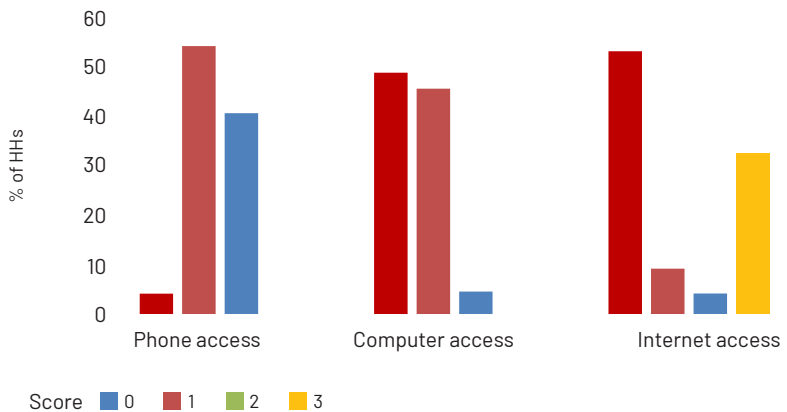
Source: BIGD Digital Literacy Survey 2019

**Table A.2.17. Employment-wise household head's literacy**

Employment status	Literacy	
	Illiterate	Literate
Unemployed	44.94	55.06
Employed	49.76	50.24



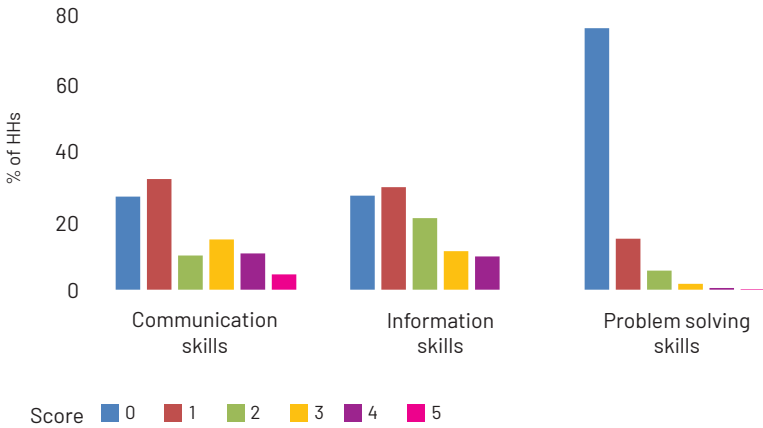
**Figure A.2.1. Employment-wise literacy of household head**



**Figure A.2.2. Digital Access: Frequency distribution (%) of domain-level raw scores**

Source: BIGD Digital Literacy Survey 2019

From the frequency distribution of the domain-level raw scores (Figure A.2.2), we can see that high proportion of the households scored zero (i.e., “no access”) for the internet (54%) and computer (49%) domains, while for mobile, only 4% households scored zero. On the other hand, 41%, 33%, and 5% of the households obtained the highest possible scores for the mobile, internet, and computer domains, respectively



**Figure A.2.3. Digital Skills: Frequency distribution (%) of domain-level raw scores**

Source: BIGD Digital Literacy Survey 2019

The frequency distribution of the domain-level raw scores (Figure A.2.3) reflects the above fact. Almost 80% of the rural households are observed to score zero (i.e. no skills) for the problem-solving domain; whereas for information and communication domains, this proportion is below 30%. On the other hand, 10%, 5%, and 0.1% of the households achieved the highest possible scores for the information, communication, and problem-solving domains, respectively.

### A.3. Descriptive Findings on Digital Literacy

Table A.3.1. Test results of the MDAP in the household

Task 1 (Downloading passport application form)		
Successful to find passport application form from the website	Freq.	Percentage
Yes	723	11.12
No	5670	87.23
Yes, but it took a long time	30	0.46
Web site shut down	77	1.18
Total	6,500	100
Task 2 (Finding out passport application fee)		
Successful to find passport fees information from the website	Freq.	Percentage
Yes	778	11.97
No	5620	86.46
Yes, but it took a long time	25	0.38
Web site shut down	77	1.18
Total	6,500	100
Task 3 (Finding hotline number)		
Successful to find passport office's hotline numbers from the website	Freq.	Percentage
Yes	799	12.29
No	5,607	86.26
Yes, but it took a long time	17	0.26
Web site shut down	77	1.18
Total	6,500	100

Household's MDAP was asked to download the passport application form, find out the passport application fee and passport hotline number from our provided tab menu. For the passport application form, only 11.12% of the households could download the passport application form. In the case of passport fee, 11.97% of the households successfully found out the fee, while the rest could not. For the third test, 12.29% of the households successfully found out the passport hotline number. For every test, 1.18% of the households were not able to open the official passport office website because the government shut down the site for temporary maintenance for a day.

### **Photo-visual skill test results**

Detailed results for the photo-visual skill test presented below in Table A.3.2. Those five images are: National Legal Aid helpline - 16430, National Helpline Centre for Violence Against Women and Children - 109, Union Parishad helpline - 16256, National Emergency Helpline - 999, and Health Call Centre - 16263. In the case of National Legal Aid helpline, 35.9% of the households could successfully interpret the number. Moreover, 38.1% of the households interpreted the image and hotline number of National Helpline Centre for Violence Against Women and Children. For the third image on Health Call Centre hotline number - 109, 34.57% of the households successfully interpreted the image and 36.43% of the households were also able to interpret Union Parishad helpline image. Launched on 11 December 2017, 999 is a newly introduced toll-free national emergency service in Bangladesh. In this case, 40.37% of the households successfully interpreted the image which is the maximum percentage among the five visual tests.

**Table A.3.2. Photo-visual skill tests**

	Freq.	Percentage
Picture 1 (National Legal Aid Helpline - 16430)		
Yes	2,334	35.91
No	4,166	64.09
Total	6,500	100
Picture 2 (National Helpline Centre for Violence Against Women and Children - 109)		
Yes	2,477	38.11
No	4,023	61.89
Total	6,500	100
Picture 3 (Health Call Centre - 16263)		
Yes	2,247	34.57
No	4,253	65.43
Total	6,500	100
Picture 4 (Union Parishad helpline - 16256)		
Yes	2,368	36.43
No	4,132	63.57
Total	6,500	100
Picture 5 ( National Emergency Helpline-999)		
Yes	2,624	40.37
No	3,876	59.63
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

**Table A.3.3. Type of activities using internet**

Purposes of using internet( n=6,500) multiple responses	Frequency	Percentage
Reading news	1,023	15.74
Downloading/listening to songs	1,253	19.28
Downloading/watching movies	918	14.12
Online training	122	1.88
Watching YouTube videos	1,396	21.48
Playing games	450	6.92
Paying bills	105	1.62
To search for information	942	14.49
Social media	1,224	18.83

Source: BIGD Digital Literacy Survey 2019

It should be noted that the respondents could answer with one or more options to the question on internet usage (Table A.3.3). An interesting finding is that out of the all options available, the greatest number of respondents (21.48%) stated that they use the internet for watching videos on Youtube. The second and third highest percentage is using the internet for listening or downloading songs and using social media at 19.28% and 18.83%, respectively.

### **Transaction activities via internet**

Table A.3.4 shows that 3.48% of the households have online shopping experience and 0.1% do online shopping by shopkeepers who do it on the behalf of households.

**Table A.3.4. Online shopping experience**

Online shopping (6,500)	Frequency	Percentage
Yes*	226	3.48
Never	6267	96.42
Shopkeeper does it for me	7	0.11
Total	6,500	100

\*“Yes” is defined by frequently, often, and rarely experience of online shopping

Source: BIGD Digital Literacy Survey 2019

The above table shows that only 0.57% of the households use the internet for earning money. The activities that include in earning money are selling goods, increasing member in social media pages, writing reviews, etc.

**Table A.3.5. Earning money via internet**

Use of internet for earning money (6,500)	Frequency	Percentage
Selling goods	4	0.06
Earned from liking posts	11	0.17
Earned from commenting	8	0.12
Earned from increasing members in a page	6	0.09
Observing/Writing reviews	4	0.06
Others	19	0.29
Yes	37	0.57
No, has not earned anything	6,463	99.43
Total (multiple response n=6,500)		

Source: BIGD Digital Literacy Survey 2019

Table A.3.6 shows that 3.50% of the households use the internet on their computer and 4.41% of the households use the computer for typing practice. The result also shows that 3.59% of the households use the computer to watch videos and movies.



**Table A.3.6. Usage of computer for different activities**

Activities in using computer	Frequency	Percentage
Browsing the internet for information	228	3.50
Playing games	90	1.37
Typing practice	287	4.41
Watching videos, movies	234	3.59
For using Facebook and other social networking websites	176	2.68
For earning purpose	29	0.45

## **A.4. General Findings**

The “Digital Literacy and Access to Public Services” survey by BIGD covered a lot of ground. It provides details on 6,492 rural households and covers 27,970 individuals. This chapter not only looks at the demographic and socio-economic characteristics of households and individuals obtained from the survey but also examines the usage of ICT (mobile phone, computer, and internet) at the individual level. The analyses explore variations by age, gender, and region. Wherever possible, the findings are compared with either HIES 2016 or LFS 2017, depending on definitions, concepts, ranges, etc.

This chapter is divided into several sections. Section A4.1 covers demographic and socio-economic characteristics of households, followed by demographic and socio-economic characteristics of individuals in section A4.2 and section A4.3, which provides a gender analysis. Finally, section A4.4 provides a regional analysis.

### **A.4.1. Demographic and Socio-economic Characteristics of Households**

#### **A.4.1.1. Household size and availability of electricity**

##### ***Household size***

As mentioned before, this survey covers a huge total of 6,500 households. Results indicate that 67.5% of these households have 3 to 5 members, of which 28% are 4-member households. The average household size was found to be 4.30 and median household size is 4. According to HIES 2016

report, household size is gradually decreasing in Bangladesh and, similar to the findings in this report, 69.7% households in rural areas have 3 to 5 members and that average household size is 4.11 in rural areas.

**Table A.4.1. Household size**

Household size	Freq.	Percentage	HIES 2016 (%)
1	103	1.58	3.1
2	701	10.78	11.2
3	1,341	20.63	21.5
4	1,798	27.66	28.6
5	1,249	19.22	19.6
3 to 5	4,383	67.51	69.7
6	691	10.63	9.3
7	331	5.09	3.9
8	149	2.29	1.5
9	63	0.97	0.8
10 and above	74	1.14	0.7
Total	6,500	100	100
Average household size	4.31		4.11
Median household size	4		
Standard deviation	1.72		

Source: BIGD Digital Literacy Survey 2019

### ***Electricity access and availability***

In this survey, households were asked about their access to electricity and the duration of electricity available to them per day. Results show that 94% have access to electricity, which is higher than the HIES 2016 estimate of 68.85% in rural areas. This survey indicates that 83.68% of rural households reportedly have 13 to 24 hours of electricity a day. However, nearly 7% of households reported they have no or less than 8 hours of electricity per day.

**Table A.4.2. Duration of electricity available to households per day (in hours)**

Electricity availability	Freq.	Percentage	HIES 2016 (%)
Households with electricity connection	6,132	94.34	68.85
Of which, households that get:			
Less than 8 hours	77	1.18	
8 hours	78	1.20	
9-12 hours	538	8.28	
13-24 hours	5,439	83.68	
Households with no electricity connection	368	5.66	31.15
Total	6,500	100	100

Source: BIGD Digital Literacy Survey 2019

#### **A.4.1.2. Household income and land ownership**

##### ***Household monthly income***

Households were asked about their total monthly income. More than 80% of households reported their total monthly income to be less than BDT 20,000. In fact, 45% reported getting between BDT 10,000 and BDT 20,000, which is comparable to HIES 2016 which estimated that average monthly income per household in rural areas was BDT 13,398. On the other hand, only 5.45% of households stated their total monthly income was above BDT 30,000.

**Table A.4.3. Monthly income of households (BDT)**

Monthly household income (BDT)	Freq.	Percentage
Less than 10,000	2,486	38.37
10,001 to 20,000	2,921	45.08
20,001 to 30,000	719	11.10
More than 30,000	353	5.45
Total*	6,479	100

\*21 households chose not to report their income

Source: BIGD Digital Literacy Survey 2019

### *Ownership of land*

The table below shows the size of land owned and operated by rural households as found in this survey. Percentage of households owning no land is 8.65%, which is close to the HIES 2016 estimate of 7.7% in rural areas. Percentage of households owning land of 0.50 acres and above is about 32%, which is also comparable to HIES 2016 estimate of 25.5%.

In case of operated land, the percentage of households which have operated land of 0.49 acres and below is 50.08% which is lower than the HIES 2016 estimate of 64.5%.

**Table A.4.4. Distribution of households by size of land (in acres)**

Land size (acres)	Freq.	Percentage	HIES 2016 (%)
Owned land			
Landless	562	8.65	7.7
0.01 to 0.49	3,886	59.78	66.9
0.50 to 0.99	868	13.35	11.1
1 to 2.49	840	12.92	10.4
2.50 to 7.49	308	4.74	3.4
More than 7.50	36	0.55	0.6
Total	6,500	100	100

Operated land			
Landless	382	5.88	6.4
0.01 to 0.49	3,255	50.08	64.5
0.50 to 0.99	1,143	17.58	13.1
1 to 2.49	1,248	19.2	12.4
2.50 to 7.49	431	6.63	3.1
More than 7.50	41	0.63	0.6
Total	6,500	100	100

Source: BIGD Digital Literacy Survey 2019

#### A.4.1.3. Characteristics of household heads

This section presents findings on the household heads of the 6,492 surveyed households. It explores the gender, age distribution, literacy, education, employment status, and other socio-economic and demographic characteristics of household heads.

##### *Gender of household heads*

In terms of gender distribution, nearly 83% of the household heads are male, similar to LFS 2017 estimate of 86%, while 17% are female. There was a third option available but none of the respondents in this survey identified themselves in the third gender.

**Table A.4.5. Gender distribution of household heads**

Gender	Freq.	Percentage	LFS 2017 (%)
Male	5,388	82.89	86.2
Female	1,112	17.11	13.8
Total	6,500	100	100

Source: BIGD Digital Literacy Survey 2019

##### *Age distribution of household heads*

Fifty-one per cent of household heads fall between the ages of mid-30s to mid-50s. While most male household heads are between 35 to

54 years (51%), most female household heads are 25 to 44 years of age (58%).

**Table A.4.6. Distribution of household heads by age and gender**

Age distribution of household heads			
Age groups	Male	Female	Total (n)
15-24	1.91	4.32	2.32 (151)
25-34	14.92	25.27	16.69 (1,085)
35-44	25.58	32.82	26.82 (1,743)
45-54	25.39	20.50	24.55 (1,596)
55-64	19.93	11.78	18.54 (1,205)
65-74	9.13	3.69	8.20 (533)
75 and Above	3.14	1.62	2.88 (187)
Total	100 (5,388)	100 (1,112)	100 (6,500)

Note: Pearson  $\chi^2$  associated with this table has 6 degrees of freedom and is 182.85. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

### ***Marital status of household heads***

From the table below, it is found that that 92% of household heads are currently married and nearly 7% are widow, divorced, or separated. Less than one per cent of household heads are not married.

**Table A.4.7. Marital status of household heads**

Marital status	Freq.	Percentage
Not married	61	0.94
Currently married	5,995	92.23
Widow/Divorced/Separated	444	6.83
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

### ***Religious distribution of household heads***

Most of the household heads (88%) follow Islam and 11% Hinduism. Less than one per cent of the household heads follow other religions such as Christianity or Buddhism.

**Table A.4.8. Household heads by religion**

Religion	Freq.	Percentage
Islam	5,721	88.02
Hinduism	742	11.42
Others	37	0.57
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

### ***Literacy and education of household heads***

Literacy distribution among the household heads is divided more or less 50:50. While 51% of the household heads are literate (i.e. those who can read and write), the rest are illiterate.

**Table A.4.9. Literacy rate of household heads**

Literacy of household heads	Freq.	Percentage
Literate	3,323	51.12
Not literate	3,177	48.88
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

In terms of education, nearly 67% of household heads have either not passed Class I or only studied till Class V. On the other hand, 17% of household heads have passed SSC or HSC equivalents and 3% have a diploma, or completed graduation, or hold a post-graduate degree.

**Table 4.10. Educational qualification of household heads**

Education level	Freq.	Percentage
Not passed Class I/Equivalent *	2,412	37.11
Class I to V/Equivalent	1,931	29.71
Class VI-VIII/Equivalent	827	12.72
SSC, HSC/Equivalent	1,107	17.03
Graduate/Equivalent	129	1.98
Post-graduate/Equivalent	88	1.35
Diploma/Vocational	6	0.09
Total	6,500	100

\* The category “Not passed Class I” includes those with no education.

Those with religious education have also been included as equivalents by matching their ages with the standard class system; hence there might be an overlap between the population who are “not literate” and those who are “educated”.

Source: BIGD Digital Literacy Survey 2019

### ***Labour force status, employment status, and occupation of household heads***

Eighty-three per cent among the household heads are in the labour force. Labour force participation rate (LFPR) for male household heads is 98%, which is 6 times that of female household heads (16%). The female household head unemployment rate is 5.42% which is double the overall unemployment rate of household heads at 2.32%.

**Table A.4.11. Labour force status of household heads**

Labour force status	Male	Female	Total
Labour force	4,626	166	4,792
- Out of which:			
Employed	4,524	157	4,681



Unemployed	102	9	111
Not in labour force	101	887	988
Working-age population	4,727	1,053	5,780
LFPR (%)	97.86	15.76	82.91
Unemployment rate (%)	2.20	5.42	2.32

Note: Working-age population is the number of people aged between 15 years and 64 years. Labour force participation rate (LFPR) is the labour force as a percentage of the working-age population. Unemployment rate is the number of unemployed people as a percentage of the labour force.

Source: BIGD Digital Literacy Survey 2019

Out of employed household heads, 45% are entrepreneurs or self-employed, 41% are in agriculture, and 6% are in public and private services. Of the female household heads, 41% are entrepreneurs or self-employed, 28% are in agriculture, and 15% are involved in public and private services.

**Table A.4.12. Occupation of employed household heads by gender**

Occupation of employed household heads	Male	Female	Total
Agriculture	1,878	44	1,922
%	41.51	28.03	41.06
Entrepreneur & self-employed	2,063	65	2,128
%	45.60	41.40	45.46
Public & private Service	254	23	286
%	5.61	14.65	5.92
Professional	50	3	53
%	1.11	1.91	1.13
Others	279	22	301
%	6.17	14.01	6.43
Total	4,524	157	4,681
%	100	100	100

Note: Pearson  $\chi^2$  associated with this table has 4 degrees of freedom and is 43.64. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

## A.4.2. Demographic and Socio-Economic Characteristics of Individuals

This section presents the demographic and socio-economic characteristics of 28,005 surveyed individuals. This includes observations on the gender distribution, marital status, literacy rate, education, employment and occupation of individuals among other factors.

Gender, age, marital status, and religion of individuals

Looking at the gender distribution, the survey population is comprised of 48% male and 52% female. This implies that there are 4% more females than males in this survey. In contrast, LFS 2017 found that more than 50% are male and less than 50% are female in rural areas.

**Table A.4.1. Gender distribution of individuals**

Gender	Freq.	Percentage	LFS 2017 (%)
Male	13,408	47.88	50.3
Female	14,597	52.12	49.7
Total	28,005	100.00	100

Source: BIGD Digital Literacy Survey 2019

In this survey, 31% of the sample individuals are below the age of 15 and 64% fall between 15 years and 64 years and the remaining 6% are made up of individuals aged 65 and above. Since the child dependency ratio is high, it brings the overall dependency ratio to 57%, which is slightly lower than the LFS estimate of 62.9%.

**Table A.4.14. Age distribution of individuals**

Age group	Freq.	Percentage	LFS 2017 (%)
Below 15	8,562	30.57	33.3
15-24	4,863	17.36	16.6
25-34	4,013	14.33	15.3
35-44	3,750	13.39	12.9
45-54	3,056	10.91	9.8
55-64	2,119	7.57	6.8
65 and above	1,642	5.86	5.3
Total	28,005	100.00	100
Child dependency ratio (%)		48.10	54.2
Aged dependency ratio (%)		9.22	8.7
Overall Dependency Ratio (%)		57.32	62.9

Note: Dependency ratio is the sum of the number of people below the age of 15 and the number of people above 64 as a percentage of the working-age population (aged 15 to 64)

Source: BIGD Digital Literacy Survey 2019

In terms of marital status of survey population aged 10 years and older, 29.2% of the sampled population are not married, 64% married, and around 7% are widow, divorced, or separated. As can be seen, these estimates are similar to those of LFS 2017.

**Table A.4.15. Marital status of individuals aged 10 years and older**

Marital Status	Freq.	Percentage	LFS 2017 (%)
Not married	6,576	29.22	31.7
Currently married	14,401	63.99	62.7
Widow/Divorced/Separated	1,528	6.79	5.6
Total	22,505	100	100

Note: Category "Not married" includes those who are not married yet and those who will never marry.

Source: BIGD Digital Literacy Survey 2019

Nearly 94% of those who are not married are aged between 10 to 24 years. Those who are currently married, 69% of them are aged between 25 to 54 years; however less than one per cent of those who are currently married are aged 10 to 14 years old. Moreover, 65% of those who are widows/divorced/separated are aged 55 years and older; also 4% of those widows/divorced/separated are aged 15 to 24 years old. Looking at the mean and median age for each category of marital status, it was found that the average age of those who are not married is around 16 years. The median age of those who are married is 39 years. And the average age of those who are widow, divorced, or separated is 61 years.

**Table A.4.16. Distribution of individuals by age and marital status**

Age group	Marital status			Total
	Not married	Currently married	Widow/Divorced/ Separated	
10-14	46.37	0.09	0	13.61 (3,062)
15-24	47.14	11.87	3.53	21.61 (4,863)
25-34	5.84	24.52	6.41	17.83 (4,013)
35-44	0.36	24.87	9.42	16.66 (3,750)
45-54	0.08	19.55	15.38	13.58 (3,056)
55-64	0.14	12.29	22.25	9.42 (2,119)
65-74	0.05	4.94	22.25	4.68 (1,054)
75 and above	0.03	1.87	20.75	2.61 (588)
Total	100 (6,563)	100 (14,385)	100 (1,526)	100 (22,474)
Mean age (in years)	15.98	41.11	59.80	35.04
Median age (in years)	15	39	61	33
Standard deviation	5.43	14.36	17.83	18.26

Note: Pearson c2 associated with this table has 14 degrees of freedom and is 1.9e+04. The observed differences are significant (p=0.000).

Source: BIGD Digital Literacy Survey 2019

Next, further examining the marital status among the younger population, it was found that among females aged below 18 years, 3.3% are either currently married or widow/divorced/separated, and among males aged below 21 years, this percentage is 1.4%.

**Table A.4.17. Marital status of the young sample population**

	Not married	Currently married	Widow/Divorced/Separated	Total
Female below 18 years	96.66	3.26	0.08	100 (5,089)
Male below 21	98.63	1.35	0.02	100 (5,905)

Source: BIGD Digital Literacy Survey 2019

In terms of religion, nearly 88% of the sample population follow Islam and less than 12% follow Hinduism.

**Table A.4.18. Distribution of individuals by religion**

Religion	Freq.	Percentage
Islam	24,627	87.94
Hinduism	3,225	11.52
Others	153	0.54
Total	28,005	100.00

Source: BIGD Digital Literacy Survey 2019

#### **A.4.2.2. Literacy and education**

Results suggest that nearly two-thirds (65.5%) of the sample population aged 7 years and older are literate (those who can read and write). In HIES 2016, which calculates literacy rate as the percentage of people aged seven years and older who can write a letter, the literacy rate in rural areas was 63.3%, which is similar to the findings in this survey.

**Table 4.19. Literacy rate of individuals 7 years and above**

Literacy rate	Freq.	Percentage	HIES 2016
Literate (those who can read and write)	15,936	65.51	63.3
Not literate	8,391	34.49	
Total	24,327	100.00	

Note: In this survey, literacy has been defined to include those above the age of 7 years who can read and write. Source: BIGD Digital Literacy Survey 2019

Source: BIGD Digital Literacy Survey 2019

It is found that more than 80% of the literate population are young, below 45 years; whereas the population who are not literate is mostly older. Specifically, for those who are literate, mean and median ages are 27 years and 23 years, respectively. On the other hand, the mean and median ages for those who are not literate are 44 years and 46 years, respectively.

**Table 4.20. Literacy Rate of individuals 7 years and above by age**

Age group	Literacy rate		
	Literate	Not literate	Total
Below 15	24.38	11.91	20.08 (4,884)
15-24	28.20	4.40	19.99 (4,863)
25-34	19.70	10.40	16.50 (4,013)
35-44	13.11	19.80	15.41 (3,750)
45-54	7.09	22.95	12.56 (3,056)
55-64	4.64	16.43	8.71 (2,119)
65-74	2.10	8.57	4.33 (1,054)
75 and above	0.77	5.54	2.42 (588)
Total	100 (15,936)	100 (8,391)	100 (24,327)
Mean age (in years)	27.09	44.24	33.01
Median age (in years)	23	46	31
Standard deviation	15.67	19.57	18.96

Note: In this survey, literacy has been defined to include those above the age of 7 years who can read and write. Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is  $5.5e+03$ . The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

Education indicators show that nearly 70% of individuals aged 5 years and older have passed at least Class I and highest SSC or HSC equivalent. However, 28% have either never been to school or have not passed Class I.

**Table A.4.21. Education level of individuals aged 5 years & above**

Education level	Freq.	Percentage
Not passed Class I/Equivalent*	7,036	27.73
Class I to V/Equivalent	8,263	32.56
Class VI-VIII/Equivalent	4,424	17.43
SSC, HSC/Equivalent	4,943	19.48
Graduate/Equivalent	405	1.60
Post-graduate/Equivalent	267	1.05
Diploma/Vocational	39	0.15
Total	25,377	100.00

\*The category "Not passed Class I" includes those with no education. Those with religious education have also been included as equivalents by matching their ages with the standard class system; hence there might be an overlap between the population who are "not literate" and those who are "educated".

Source: BIGD Digital Literacy Survey 2019

Of those who have not passed Class I, 56% are between ages 35 to 64 years and the mean age is 43 years. Graduate, post-graduate, and diploma certificates are more popular among the younger population. Interestingly, although 41% of those who passed Class I to Class V are below the age of 15, the mean and median age for this group are 27 years and 24 years, respectively.

**Table A.4.22. Level of education of individuals 5 years and above by age**

Categories of age	Categories of education							Total
	Not passed Class I/Equivalent*	Class I to V/Equivalent	Class VI-VIII/Equivalent	SSC, HSC/Equivalent	Graduate/Equivalent	Post-graduate/Equivalent	Diploma/Vocational	
Below 15	19	40.94	24.73	2.39	0	0	5.13	23.38 (5,934)
15-24	2.84	10	28.37	49.59	24.94	4.49	46.15	19.16 (4,863)
25-34	7.28	14.62	21.47	20.84	39.51	51.31	41.03	15.81 (4,013)
35-44	17.52	14.29	12.73	13.23	14.57	21.72	5.13	14.78 (3,750)
45-54	21.84	10.13	6.62	6.39	9.88	11.99	2.56	12.04 (3,056)
55-64	16.71	6.12	3.68	4.81	5.19	5.62	0	8.35 (2,119)
65-74	8.9	2.69	1.76	2.06	4.44	3.00	0	4.15 (1,054)
75 and above	5.90	1.21	0.63	0.69	1.48	1.87	0	2.32 (588)
Total	100 (7,036)	100 (8,263)	100 (4,424)	100 (4,943)	100 (405)	100 (267)	100 (39)	100 (25,377)
Mean age (in years)	42.46	27.19	26.75	28.76	34.40	37.28	25.72	31.87
Median age (in years)	46	24	23	24	28	33	24	30
Standard deviation	22.24	18.65	14.60	13.83	13.92	12.55	7.62	19.35

\* The category "Not passed Class I" includes those with no education.

Those with religious education have also been included as equivalents by matching their ages with the standard class system; hence there might be an overlap between the population who are "not literate" and those who are "educated".

Pearson c2 associated with this table has 42 degrees of freedom and is 9.9e+03. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019



### A.4.2.3. Labour force status, employment, and occupation

According to LFS 2017, labour force refers to persons 15 years or older who contribute or are available to contribute to the production of goods and services in the country. They are either employed or unemployed. Employed are those who are currently working and unemployed are those who are seeking work. In this survey, these definitions have been followed to the furthest extent possible; those not in the labour force includes people aged 15 years and older who are housewives, students, or retired.

This survey finds that overall labour force participation is 44.22% (compared to 59.3% in rural areas as found by LFS 2017) and the unemployment rate is 7.67% (whereas it is 4.0% in rural areas, as reported by LFS 2017).

**Table A.4.23. Labour force status of sample population aged 15 years and older**

Labour force status	Freq.	Percentage	LFS 2017 (%)
Labour force	7,871	44.22	59.3
Out of which			
Employed	7,267	-	56.9
Unemployed	604		2.4
Not in labour force	9,930	55.78	40.7
Working-age population	17,801	100	
LFPR (%)	-	44.22	59.3
Unemployment rate (%)	-	7.67	4.0

Note: Working-age population is the number of people aged between 15 years and 64 years. Labour force participation rate (LFPR) is the labour force as a percentage of the working-age population. Unemployment rate is the number of unemployed people as a percentage of the labour force.

Source: BIGD Digital Literacy Survey 2019

About 67% of the labour force is comprised of individuals aged between 25 to 54 years. As for those not in the labour force, 35% are those aged 15 to 24 years. The mean age for those in the labour force is 38 years, whereas the mean age for those who are not is 31 years.

**Table A.4.24. Age distribution of labour force status of population aged 15 years and older**

Age categories	Labour force	Not in labour force	Total
15-24	17.39	35.19	27.32 (4,863)
25-34	23.80	21.55	22.54 (4,013)
35-44	23.15	19.42	21.07(3,750)
45-54	20.21	14.75	17.17(3,056)
55-64	15.45	9.09	11.9 (2,119)
Total	100 (7,871)	100 (9,930)	100 (17,801)
Mean age (in years)	38.59	33.01	35.48
Median age (in years)	38	31	35
Standard deviation	13.27	13.64	13.76

Note: Pearson  $\chi^2$  associated with this table has 4 degrees of freedom and is 772.94. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

In terms of employment status, the median age for those who are employed is 38 years and the median age for those who are unemployed is 24 years. Moreover, it can be seen that the unemployed population is mostly comprised of those in the age groups 15 to 24 years (52%) and those aged 55 to 64 years (21%).

**Table A.4.25. Employment status of those in the labour force aged 15 years and older by age**

Age categories	Employment status		
	Employed	Unemployed	Total
15-24	14.50	52.15	17.39 (1,369)
25-34	24.55	14.74	23.80 (1,873)
35-44	24.70	4.47	23.15 (1,822)
45-54	21.23	7.95	20.21 (1,591)
55-64	15.01	20.70	15.45 (1,216)
Total	100 (7,267)	100 (604)	100 (7,871)
Mean age (in years)	39.13	32.00	38.59
Median age (in years)	38	24	38
Standard deviation	12.76	17.06	13.27

Note: Pearson c2 associated with this table has 4 degrees of freedom and is 635.965. The observed differences are significant (p=0.000).

Source: BIGD Digital Literacy Survey 2019

To explore occupation, it has been divided into two categories: agriculture and non-agriculture. Agriculture includes farming, fisheries, and livestock rearing. Non-agriculture includes (1) entrepreneurs and self-employed (businesses, day labourers, transport workers, craftsmen etc.), (2) public and private services, (3) professionals (teachers, doctors, engineers etc.), and (4) others. Survey findings reveal that 36% of the surveyed rural population are employed in the agriculture sector. The remaining 64% are involved in non-agricultural occupations. These estimates are similar to the HIES 2016 overall estimates of occupation, but different from the rural estimates which say that 49% in rural areas are employed in agriculture and 51% are employed in non-agriculture.

Nearly 45% are entrepreneurs or self-employed, 9% are involved in public and private services, and less than 2% are pursuing professional careers.

**Table A.4.26. Occupation distribution of employed population aged 15 years and older**

Occupation	Freq.	Percentage	HIES 2016 Rural(%)	HIES 20160 verall (%)
Agriculture	2,641	36.34	49.00	37.80
Non-agriculture	4,626	63.66	51.00	62.20
Out of which				
Entrepreneur & self-employed	3,268	44.97		
Public & private service	689	9.48		
Professional	117	1.61		
Others	552	7.60		

Source: BIGD Digital Literacy Survey 2019

Of those employed in agriculture, 52% are between 45 and 64 years. Moreover, 35 to 54 years make up 45% of those who are entrepreneurs or self-employed. Among those employed as professionals, 68% are between the ages of 25 to 44 years. The median age is highest at 45 years for agriculture and the lowest at 31 years for public and private services.

**Table A.4.27. Age distribution of occupation of employed population aged 15 years and older**

	Occupation					Total
	Agri- culture	Entrepreneur & self- employed	Public & private service	Professional	Others	
Age categories						
15-24	8.22	16.62	24.67	4.27	21.56	14.50 (1,054)
25-34	17.83	27.11	33.82	34.19	27.90	24.55 (1,784)
35-44	21.73	27.17	24.67	34.19	22.28	24.70 (1,795)
45-54	28.02	18.70	10.89	19.66	17.03	21.23 (1,543)
55-64	24.20	10.40	5.95	7.69	11.23	15.01 (1,091)
Total	100 (2,641)	100 (3,268)	100 (689)	100 (117)	100 (552)	100 (7,267)
Mean age (in years)	43.62	37.29	33.17	38.60	36.13	39.13
Median age (in years)	45	37	31	37	35	38
Standard deviation	12.48	12.19	11.13	9.88	13.18	12.76

Note: Pearson  $\chi^2$  associated with this table has 16 degrees of freedom and is 618.27. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

### A.4.3. Gender-Wise Descriptive Information

This section takes a deeper look at differences in individual characteristics by gender. Individual characteristics looked into include age distribution, marital status, literacy and education, employment, and occupation. The overall objective is to see the extent of the gender gap in these areas.

#### *Age-gender distribution*

In this survey, of the population aged below 15 years, 32% are male and 29% female. The proportion of female is greater than that of male for ages 15 years to 54 years, thereby raising the overall proportion of female compared to male. It can be seen that findings from this survey are somewhat consistent with the findings of the LFS 2017 survey.

Table A.4.28. Distribution of individuals by age and gender

	Gender		Total (n)	LFS 2017	
	Male	Female		Male	Female
Age groups	Percentage	Percentage		Percentage	Percentage
Below 15	32.12	29.16	30.57 (8,562)	34.2	32.4
15-24	16.91	17.78	17.36 (4,863)	16.8	16.4
25-34	12.60	15.92	14.33 (4,013)	13.6	17.0
35-44	12.21	14.48	13.39 (3,750)	12.5	13.4
45-54	10.87	10.95	10.91 (3,056)	9.7	9.9
55-64	8.78	6.45	7.57 (2,119)	7.2	6.4
65 and above	6.52	5.26	5.86 (1,642)	6.1	4.5
Total	100 (13,408)	100 (14,597)	100 (28,005)	100	100
Mean age (in years)	29.32	28.88	29.09	-	-
Median age (in years)	25	26	26	-	-
Standard deviation	21.01	19.73	20.35	-	-

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 178.20. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

**Gender variation in marital status**

Around 36% of the male population aged 10 years and older are not married, whereas only 23% of the female population of the same age range are not married. Nearly 66% of the female population are currently married which is higher than the percentage for males. About 12% of females are widows/divorced/separated and the corresponding percentage for males is less than 2%. It is observed that the estimates from this survey match closely with estimates presented in LFS 2017.

**Table A.4.29. Marital status for individuals aged 10 years and older by gender**

	Gender			LFS 2017	
	Male	Female	Total	Male	Female
Marital status					
Not married	36.48	22.70	29.22 (6,576)	38.8	24.6
Currently married	61.96	65.81	63.99 (14,401)	59.7	65.8
Widow/Divorced/ Separated	1.56	11.49	6.79 (1,528)	1.5	9.6
Total	100 (10,653)	100 (11,852)	100 (22,505)	100	100

Note: Pearson  $\chi^2$  associated with this table has 2 degrees of freedom and is 1.2e+03. The observed differences are significant (p=0.000).

Source: BIGD Digital Literacy Survey 2019

**Gender variation in literacy and education**

In terms of literacy, it can be seen that the distribution of literacy is the same for both male and female.

**Table A.4.30. Literacy rate for 7 years & above by gender**

	Male (%)	Female (%)	Total (n)
Literacy			
Literate	66.14	64.94	65.51 (15,936)
Not literate	33.86	35.06	34.49 (8,391)
Total	100 (11,570)	100 (12,757)	100 (24,327)

Note: In this survey, literacy has been defined to include those above the age of 7 years who can read and write. Pearson  $\chi^2$  associated with this table has 1 degree of freedom and is 3.86. The observed differences are significant at 5% ( $p=0.049$ ).

Source: BIGD Digital Literacy Survey 2019

In the case of education, it can be seen that there are more females than males who have not passed Class I. But then again, there are also more females than males who passed Class VI to VIII. Females lag slightly behind in all the other categories.

**Table A.4.31. Gender distribution of education of individuals 5 years & above**

Categories of education	Gender		
	Male	Female	Total
Not passed Class I/Equivalent *	26.50	28.84	27.73 (7,036)
Class I to V/Equivalent	34.48	30.81	32.56 (8,263)
Class VI-VIII/Equivalent	15.38	19.31	17.43 (4,424)
SSC, HSC/Equivalent	19.96	19.04	19.48 (4,943)
Graduate/Equivalent	2.01	1.22	1.60 (405)
Post-graduate/Equivalent	1.40	0.74	1.05 (267)
Diploma/Vocational	0.27	0.05	0.15 (39)
Total	100 (12,097)	100 (13,280)	100 (25,377)

\* The category "Not passed Class I" includes those with no education.

Those with religious education have also been included as equivalents by matching their ages with the standard class system; hence there might be an overlap between the population who are "not literate" and those who are "educated".

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 177.48. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

***Gender variation in labour force status, employment, and occupation***



The male labour force participation rate (LFPR) is 84% (similar to LFS 2017 figure of 80.3%), whereas the female LFPR is only 9.77% which brings down the overall LFPR to 44.22%. Similarly, in this survey, it was found that the male unemployment rate is 5%, while the female unemployment rate is 26%. Meanwhile, the corresponding estimates by LFS 2017 are 3.0% and 5.9%, respectively.

**Table A.4.32. Labour force status of population aged 15 years and older**

Labour force status	LFS 2017				
	Male	Female	Total	Male	Female
Labour force	6,936	935	7,871	-	-
Out of which					
Employed	6,577	690	7,267	-	-
Unemployed	359	245	604	-	-
Not in labour force	1,292	8,638	9,930	-	-
Working-age population	8,228	9,573	17,801	-	-
LFPR %	84.30	9.77	44.22	80.3	38.6
Unemployment rate %	5.18	26.20	7.67	3.0	5.9

Note: Working-age population is the number of people aged 15 years and older. Labour force participation rate (LFPR) is the labour force as a percentage of the working-age population. Unemployment rate is the number of unemployed people as a percentage of the labour force.

Source: BIGD Digital Literacy Survey 2019

In terms of occupation, the proportion employed in agriculture is the same both male and female. In non-agriculture sectors, a large proportion (26%) of females are involved in entrepreneurship/self-employment. The percentages of female are higher than male for public and private services (21%) and professionals (4.64%).

**Table A.4.33. Gender distribution of occupation of employed population aged 15 years and older**

Occupation	Male	Female	Total
Agriculture	36.29	36.81	36.34 (2,641)
Non-agriculture	63.71	63.19	63.66 (4,626)
Out of which			
Entrepreneur & self-employed	46.89	26.67	44.97 (3,268)
Public & private Service	8.27	21.01	9.48 (689)
Professional	1.29	4.64	1.61 (117)
Others	7.25	10.87	7.60 (552)

Note: Pearson  $\chi^2$  associated with this table has 4 degrees of freedom and is 217.97. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

## A4.4. Regional Descriptive Information

This section looks at regional variation in characteristics of households, characteristics of individuals and individual usage of mobile phone, computer, and internet. Namely, this section compares estimates across the eight divisions of the country: Barisal, Chattogram, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, and Sylhet.

### *Household distribution*

In this survey, the largest number of surveyed rural households were from Dhaka (19%), Chattogram, and Rajshahi (15%) each, which makes this survey nationally representative, given these are both highly populated divisions.

**Table A.4.34. Number of households in each division**

Division	Freq.	Percentage
Barisal	520	8
Chattogram	980	15.08
Dhaka	1,260	19.38
Khulna	860	13.23
Mymensingh	540	8.31
Rajshahi	980	15.08
Rangpur	920	14.15
Sylhet	440	6.77
Total	6,500	100

Source: BIGD Digital Literacy Survey 2019

### ***Household size***

The average household size was found to be 4.30, similar to the average household size of 4.11 in rural areas, as reported in HIES 2016. The regional distribution indicates that the average household size is highest at 5.28 in Sylhet division and lowest at 3.94 in Rajshahi. Median household size is 4 for nearly all the divisions.

**Table A.4.35. Regional variation in average Household size**

Division	Average household size	Median household size	Standard deviation	Total (n)
Barisal	4.17	4	1.66	520
Chattogram	4.94	5	1.96	980
Dhaka	4.17	4	1.71	1,260
Khulna	4.12	4	1.55	860
Mymensingh	4.31	4	1.60	540
Rajshahi	3.94	4	1.42	980
Rangpur	4.00	4	1.54	920
Sylhet	5.28	5	1.94	440
Total	4.31	4	1.72	6,500

Source: BIGD Digital Literacy Survey 2019

## Electricity availability

Access to electricity is lowest in Mymensingh division where 23% of the households have no electricity. Moreover, Mymensingh and Chattogram divisions also have the highest and equal percentage of households (25 %) which get less than 8 hours of electricity. Unsurprisingly, 20.14% of households that get 13 to 24 hours of electricity are in Dhaka division, followed by 17% in Rajshahi and 15% in Chattogram.

**Table A.4.36. Regional variation in hours of electricity available in a household in a day**

Division	Hours of electricity					Total
	Less than 8 hours	8 hours	9-12 hours	13-24 hours	No electricity connection	
Barisal	6.49	17.95	12.27	7.08	13.59	8.00 (520)
Chattogram	24.68	7.69	13.94	15.44	10.87	15.08 (980)
Dhaka	3.9	12.82	22.68	20.15	7.88	19.38 (1,260)
Khulna	12.99	8.97	9.48	14.12	6.52	13.23 (860)
Mymensingh	24.68	17.95	11.34	6.67	22.55	8.31 (540)
Rajshahi	2.6	10.26	7.99	16.57	7.07	15.08 (980)
Rangpur	10.39	8.97	8.92	14.67	16.03	14.15 (920)
Sylhet	14.29	15.38	13.38	5.30	15.49	6.77 (440)
Total	100 (77)	100 (78)	100 (538)	100 (5,439)	100 (368)	100 (6,500)

Note: Pearson  $\chi^2$  associated with this table has 28 degrees of freedom and is 439.40. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

## Household heads

Barisal division has the highest proportion of female-headed households relative to male-headed households (25%). Rajshahi division has the lowest proportion of less than 11% female-headed households.

**Table A.4.37. Regional variation in household heads by gender**

Division	Male-headed households	Female-headed households	Total
Barisal	390	130	520
	75	25	100
Chattogram	752	228	980
	76.73	23.27	100
Dhaka	1,003	257	1,260
	79.6	20.4	100
Khulna	760	100	860
	88.37	11.63	100
Mymensingh	446	94	540
	82.59	17.41	100
Rajshahi	875	105	980
	89.29	10.71	100
Rangpur	789	131	920
	85.76	14.24	100
Sylhet	373	67	440
	84.77	15.23	100
Total	5,388	1,112	6,500
	82.89	17.11	100

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 111.58. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

## **Gender**

The majority of both male and female populations (18.56% and 19.02%, respectively) are from the Dhaka division. The lowest proportion of both male and female individuals (7.43% and 8.05%, respectively) are from the Barisal division.

**Table A.4.38. Regional variation by gender**

Division	Gender		Total
	Male	Female	
Barisal	995	1,174	2,169
%	7.42	8.04	7.75
Chattogram	2,258	2,587	4,845
%	16.86	17.75	17.32
Dhaka	2,486	2,772	5,258
%	18.54	18.99	18.78
Khulna	1,708	1,838	3,546
%	12.74	12.59	12.66
Mymensingh	1,122	1,204	2,326
%	8.37	8.25	8.31
Rajshahi	1,928	1,932	3,860
%	14.38	13.24	13.78
Rangpur	1,796	1,884	3,680
%	13.39	12.91	13.14
Sylhet	1,115	1,206	2,321
%	8.32	8.26	8.29
Total	13,408	14,597	28,005
	100	100	100

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 15.54. The observed differences are significant at 5% level ( $p=0.030$ ).

Source: BIGD Digital Literacy Survey 2019

## Age

In Sylhet, 37% of the population is below 15 years, compared to 35% in Mymensingh. As for the old age population, 8.02% are those aged 65 years and above in Barisal, compared to 6.64% in Khulna. In Chattogram 21% are between the ages of 15 to 24 years, compared to 19% in Sylhet. Lowest median age is 20 years in Sylhet and the highest is 30 years in Khulna.

**Table A.4.39. Regional variation of individuals by age**

Age groups	Division								Total
	Barisal	Chattogram	Dhaka	Khulna	Mymensingh	Rajshahi	Rangpur	Sylhet	
Below 15	32.73	31.27	30.09	26.40	34.78	27.31	29.78	37.05	30.57
15-24	15.95	20.83	17.44	15.96	15.99	16.37	15.57	19.30	17.36
25-34	12.22	13.62	15.2	15.71	14.53	14.95	14.51	12.19	14.33
35-44	12.72	10.86	12.93	14.64	12.47	16.27	14.84	12.28	13.39
45-54	10.14	10.09	10.21	12.10	10.49	12.49	11.96	9.26	10.91
55-64	8.21	7.47	7.97	8.57	7.09	7.38	7.99	4.83	7.57
65-74	4.93	4.09	4.09	4.03	3.05	3.39	3.15	3.15	3.76
75 and above	3.09	1.78	2.07	2.59	1.59	1.84	2.2	1.94	2.1
Total	100 (2,169)	100 (4,845)	100 (5,258)	100 (3,546)	100 (2,326)	100 (3,860)	100 (3,680)	100 (2,321)	100 (28,005)
Mean age (in years)	29.70	27.95	29.15	31.34	27.29	30.28	29.83	25.93	29.09
Median age (in years)	25	23	26	30	24	29	28	20	26
Standard deviation	21.56	20.21	20.50	20.54	20.07	19.68	20.27	19.70	20.35

Note: Pearson  $\chi^2$  associated with this table has 49 degrees of freedom and is 332.19. The observed differences are significant ( $p=0.000$ ).  
Source: BIGD Digital Literacy Survey 2019

## Literacy

In terms of literacy, the proportion of the literate population is highest in Barisal division at 71%, followed by 69.9% in Khulna and 68% in Dhaka division. The population who are not literate is highest in Sylhet division at 44%, followed by 43.83% in Mymensingh and 38.36% in Rajshahi. Estimates that match closest to HIES 2016 figures are for Barisal, Chattogram, and Rajshahi divisions.

**Table A.4.40. Regional distribution of literacy rate**

Division	Literacy		Total	HIES 2016
	Literate	Not literate		Literacy (%)
Barisal	1,341	540	1,881	
	71.29	28.71	100	73.3
Chattogram	2,828	1,346	4,174	
	67.75	32.25	100	66.1
Dhaka	3,104	1,448	4,552	
	68.19	31.81	100	65.6
Khulna	2,195	945	3,140	
	69.9	30.1	100	64.8
Mymensingh	1,102	860	1,962	
	56.17	43.83	100	59.8
Rajshahi	2,118	1,318	3,436	
	61.64	38.36	100	59.6
Rangpur	2,139	1,061	3,200	
	66.84	33.16	100	57.9
Sylhet	1,109	873	1,982	
	55.9	44.05	100	59.1
Total	15,936	8,391	24,327	
	65.5	34.49	100	63.3

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 259.61. The observed differences are significant ( $p=0.000$ ).

In this survey, literacy has been defined to include those above the age of 7 years who can read and write. HIES 2016 defines literacy as those aged 7 years and older who can write a letter.

Source: BIGD Digital Literacy Survey 2019



## Employment

In Rajshahi, 96.5% of the sample population are employed, which is the highest proportion, followed by 95.5% in Khulna and 94.7% in Barisal. Sylhet has the highest percentage of unemployed at 15%, followed by Chattogram with 12% and Dhaka with 9%.

**Table A.4.41. Regional variation in employment status**

Division	Employment status		Total
	Employed	Unemployed	
Barisal	546	30	576
	94.79	5.21	100
Chattogram	1,079	150	1,229
	87.79	12.21	100
Dhaka	1,349	136	1,485
	90.84	9.16	100
Khulna	1,028	48	1,076
	95.54	4.46	100
Mymensingh	566	37	603
	93.86	6.14	100
Rajshahi	1,099	40	1,139
	96.49	3.51	100
Rangpur	1,031	63	1,094
	94.24	5.76	100
Sylhet	569	100	669
	85.05	14.95	100
Total	7,267	604	7,871
	92.33	7.67	100

Note: Pearson  $\chi^2$  associated with this table has 7 degrees of freedom and is 146.33. The observed differences are significant ( $p=0.000$ ).

Source: BIGD Digital Literacy Survey 2019

**Table A.4.42. Preferred mode of travel to nearest ICT facilities**

	Market	Computer shop	Union Digital Centre
Walking	3,915	3,845	1,736
%	60.23	59.15	26.71
Rickshaw/van	1,117	1,086	1,808
%	17.18	16.71	27.82
CNG	268	306	696
%	4.12	4.71	10.71
Easy bike	497	538	1,133
%	7.65	8.28	17.43
Bicycle	479	465	522
%	7.37	7.15	8.03
Motorcycle	145	141	211
%	2.23	2.17	3.25
Bus	14	18	77
%	0.22	0.28	1.18
Boat	54	52	67
%	0.83	0.80	1.03
Car	4	5	10
%	0.06	0.08	0.15
Train	0	0	1
%	0.00	0.00	0.02
None of these/Do not know	7	44	239
%	0.11	0.68	3.68
Total	6,500	6,500	6,500
	100	100	100



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