bgi WEBINAR

Digital Inclusion Series

Ep 1: Digital Literacy in Rural Bangladesh

Sunday, 13 September | 12:00 pm

Research Team

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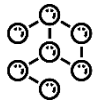
Presentation Outline

- **Introduction and Background**
  - Scope, Objectives, Research Questions
  - Sample and Survey Design
- **Digital Literacy of Rural Household (DLit_BIGD 1.0): A Conceptual Framework**
  - Digital Access: Analysis and Findings
  - Digital Skills: Analysis and Findings
  - Digital Literacy: Analysis and Findings
  - Determinants (Key Factors) Analysis
  - Summary and Policy Implications

Introduction and Background

Background

E-services reduce costs (**money** and **time**), bring **transparency**, leading to public **satisfaction** and **trust.**



Decentralized, accessible and efficient public e-service delivery is among GoB's top priorities, had some major success.

But, major **demand side** (i.e., at consumer or public end) and **supply side** (i.e., at government and service providers end) constraints exist.

No survey in Bangladesh to assess demand side attributes (e,g. HH-level skills and access)

Lack of systematic study and evidence hinder effective and informed policymaking on digitizaiton

To address this important gap, BIGD conducted a "**Digital Literacy and Access to Public Services**" Household survey.

Scope, Objectives, & Research Questions

Scope

Rural Bangladesh

Objectives

a) To explore the current state of digital literacy at rural Household (HH) level to develop a conceptual framework

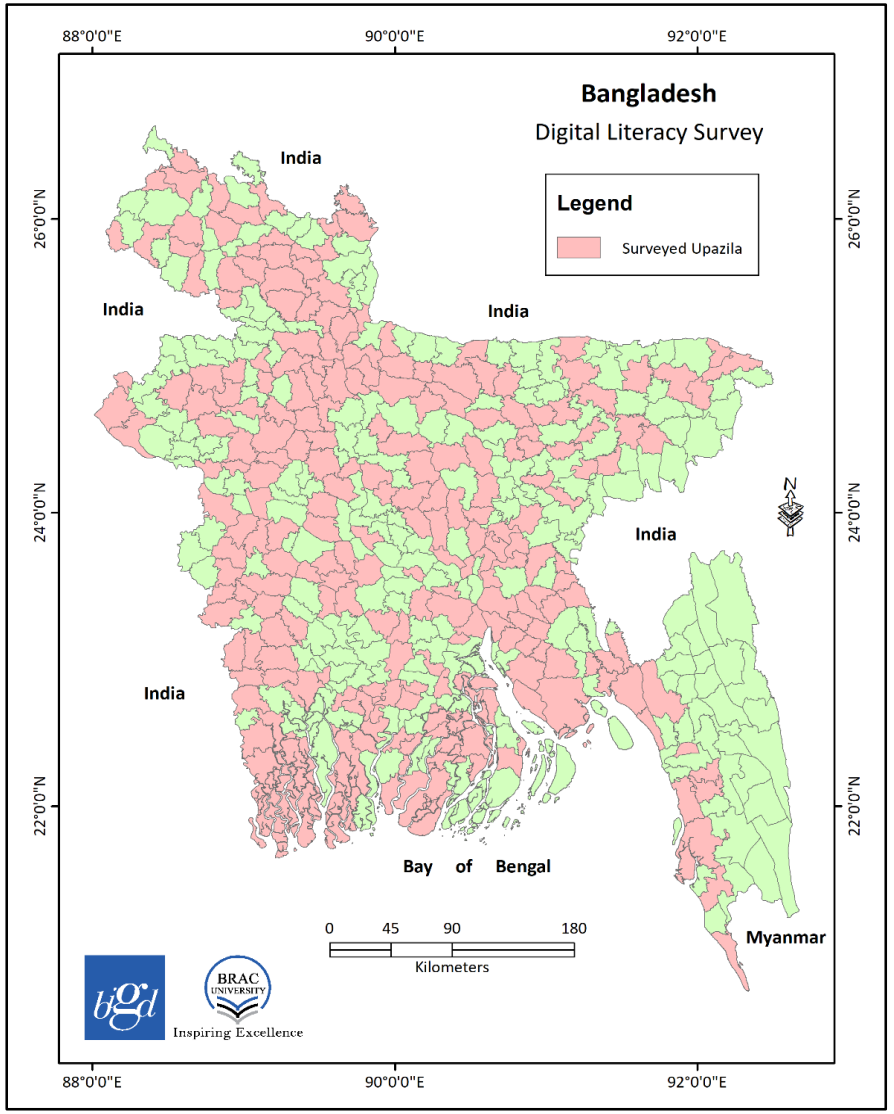
a) To construct the first ever digital literacy index for rural Bangladesh at rural HH level: **“DLit_BIGD 1.0”**

Research Questions

- What is the state of digital literacy in a rural setting with limited exposure?
- Is there any structural (e.g., geographical, gender) disparity?
- What are the key determinants of digital literacy (Access and Skills)?

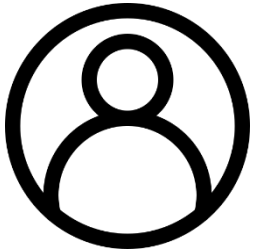
Sampling Design and Coverage

- A nationally representative sample
  - (at Division level) of 6,500 rural HHs
- Two-stage cluster sampling technique using BBS's IMPS framework
  - 1st Stage: 325 PSUs from 60 districts (4 hill tract districts are excluded)
  - 2nd stage: 20 households within each PSU
- Survey period: Sept and Nov 2019

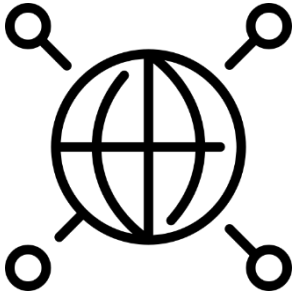


Key Features in Survey Design

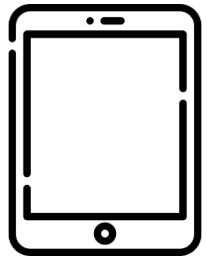
Mini FGD style in each HH to identify the “**most digitally able person (MDAP)”** in that HH (49% of MDAP are HH head).



The MDAP (in the presence of all HH members) answered questions on digital literacy.



HH level digital literacy corresponds to the highest level of individual digital literacy available to the household; and cannot be generalized to individual level.



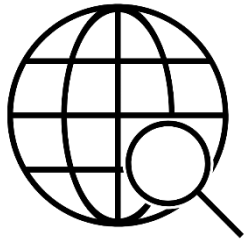
Enumerators used SurveyCTO on tablets to conduct the interviews.

Average duration for each interview was two hours.

Innovation in Survey Instrument

Two hands-on (on Tab) tests were included:

Digital Activity test

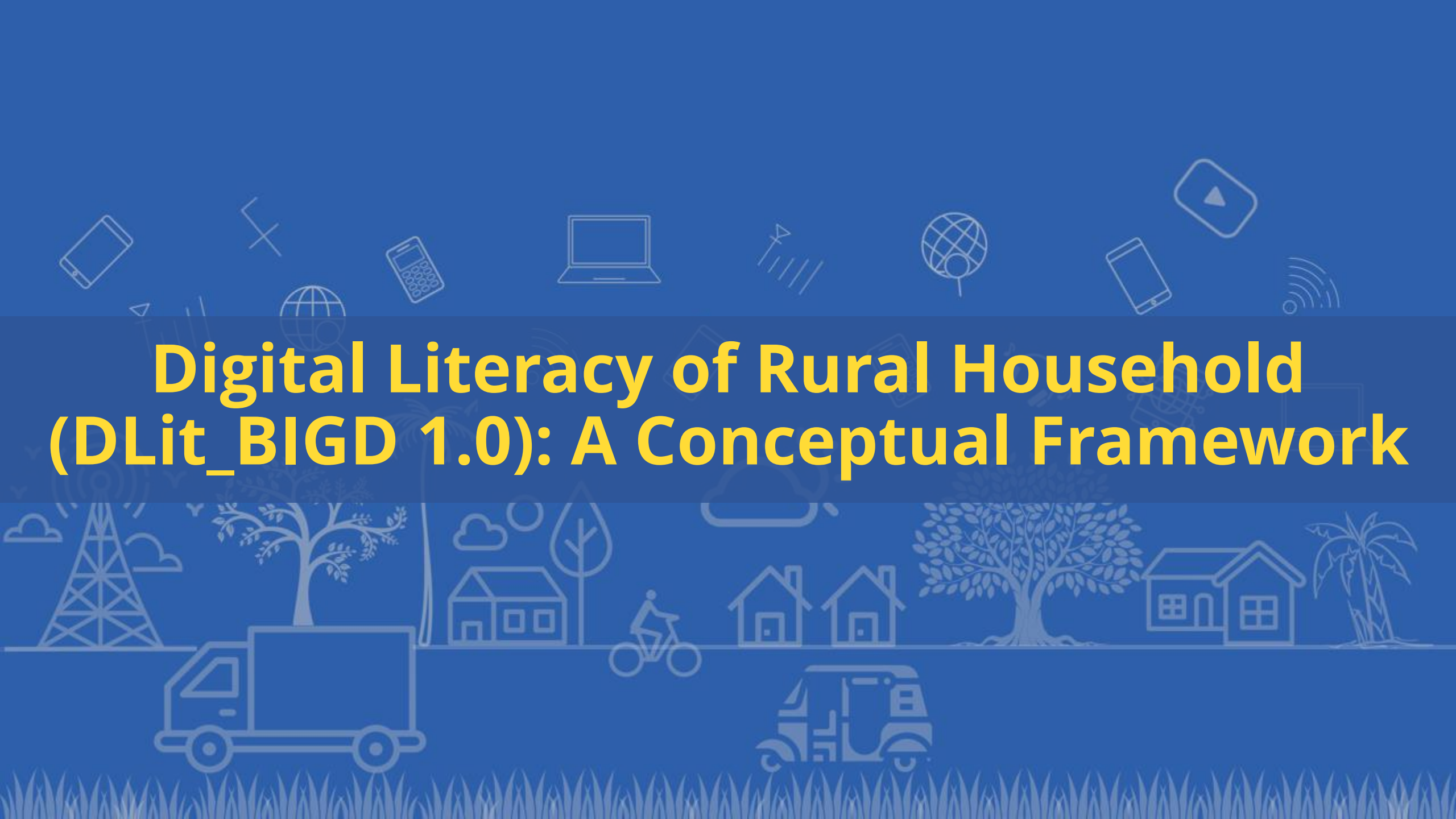


To assess the ability of basic internet browsing and finding information on a particular website (homepage of the Bangladesh Department of Immigration and Passport).

Visual Activity test

To assess the visual recognition ability of the respondents (identify common visual icons depicting hotline numbers of five government entities).

We record the completion of tasks and do not investigate the proficiency level.



Digital Literacy of Rural Household (DLit_BIGD 1.0): A Conceptual Framework

Digital Literacy: An Unsettled Concept

Digital literacy - a multidimensional concept, but a contested and unsettled one

Several conceptual frameworks proposed to accommodate different contexts, research /policy questions, dimensions, and data availability leading to diverse and inconsistent sets of indicators.

E.g., The European Digital_Competence_Framework for Citizens (DigComp) , Chetty et al (2018), Rosa (2014), Park's (2012), Martin (2003, 2009).

Salient features of Digital literacy in existing literature are:

- Measured at the individual level
- conceptualized in a developed country context
- Often involve higher and tertiary level indicators

The Digital Literacy Conceptual Framework for Rural Household in Bangladesh

DLI classification
Below average
when DLI <median
A**bove average**
when DLI >median

Digital Literacy Index (DLI)

A bottom-up approach with equal weight aggregation is applied*:*
First, domain level raw scores are added to find dimension level (DA and DS) raw scores. Next the dimension level raw scores are normalized. Then, the normalized dimension level scores were added to find the DLI raw score, which is normalized to obtain the DLI score of a household.

Dimension (DA & DS) level classification
None = "None" in all domains
Low = **"**None" in at least one, but not all
Basic = At least "Basic" in all domains
Above basic = above-basic in all domains

Digital Access (DA)

Digital Skills (DS)

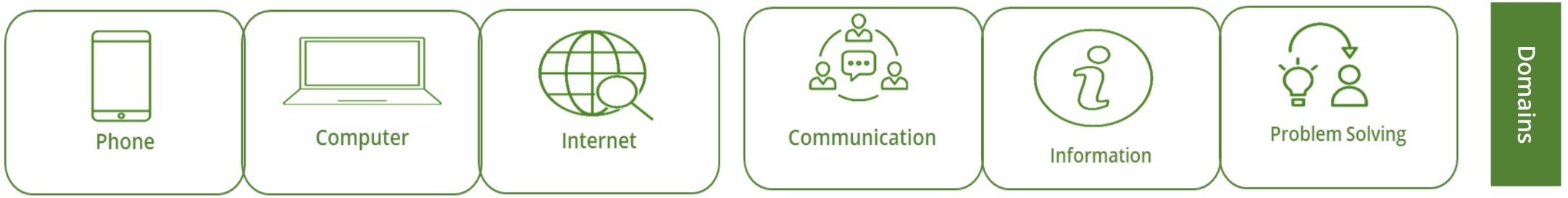
Domain level classification (raw score)
None (0) = no domain level traits
Basic (1) = basic level traits
Above basic (>1) = above basic traits

DLIT_BIGD 1.0

Dimension

Domains

Key Indicators under each domain



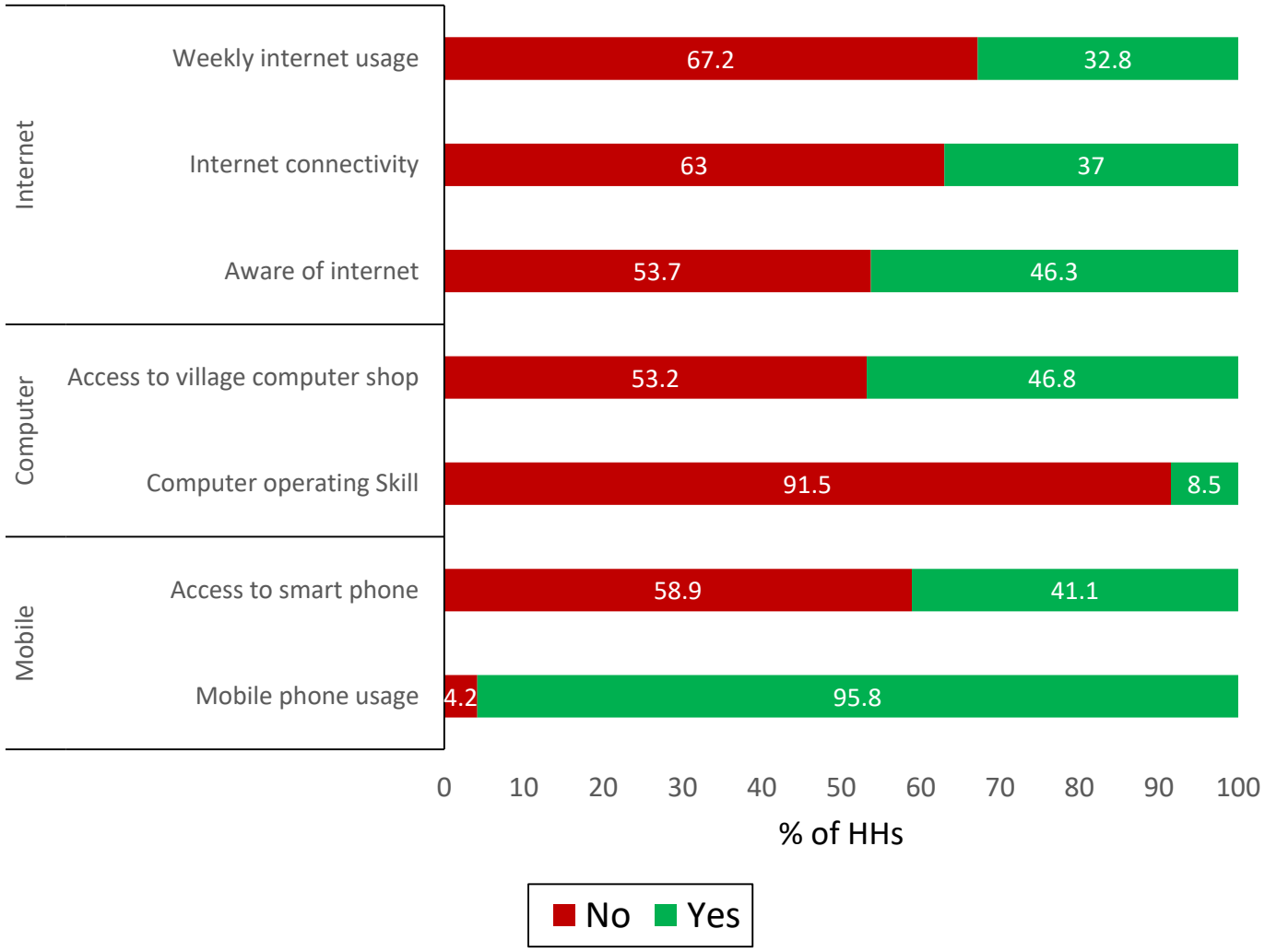
Phone	Computer	Internet	Communication	Information	Problem Solving
• Mobile Phone usage • Access to smartphone	• Computer operating skills • Access to village computer shop	• Aware of the internet • Internet connectivity • Using internet at least once a week	• Read/write mobile SMS • Check/send emails • Making video calls using apps • Social media participation • Commenting on social media	• Searching internet for information • Obtained public service information through digital medium • Visual literacy activity • Digital activity	• Mobile bill payment • Computer use for productive activity • Internet use for functional activities • Online shopping • Online earning

Key Indicators

Key indicators (dummy variables) are carefully chosen: relevant to the context and not redundant.

Digital Access: Analysis and Findings

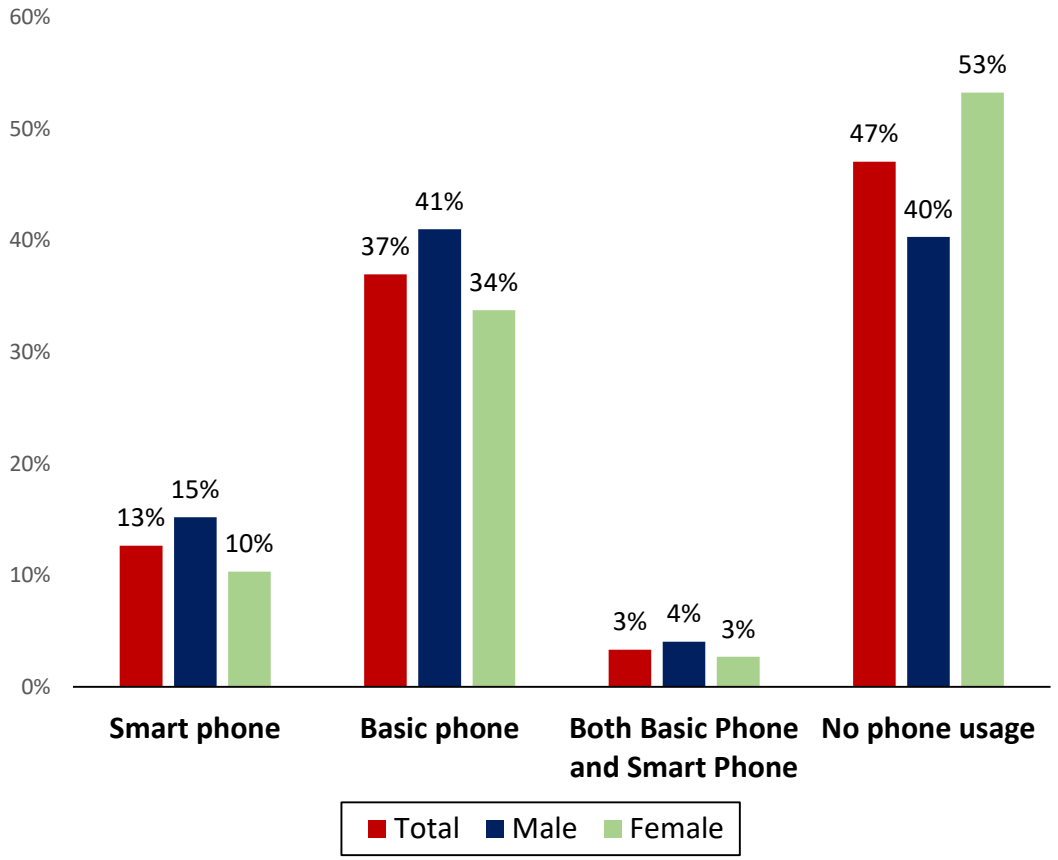
Digital Access: Frequency Distribution (%) of Key Indicators (n=6500)

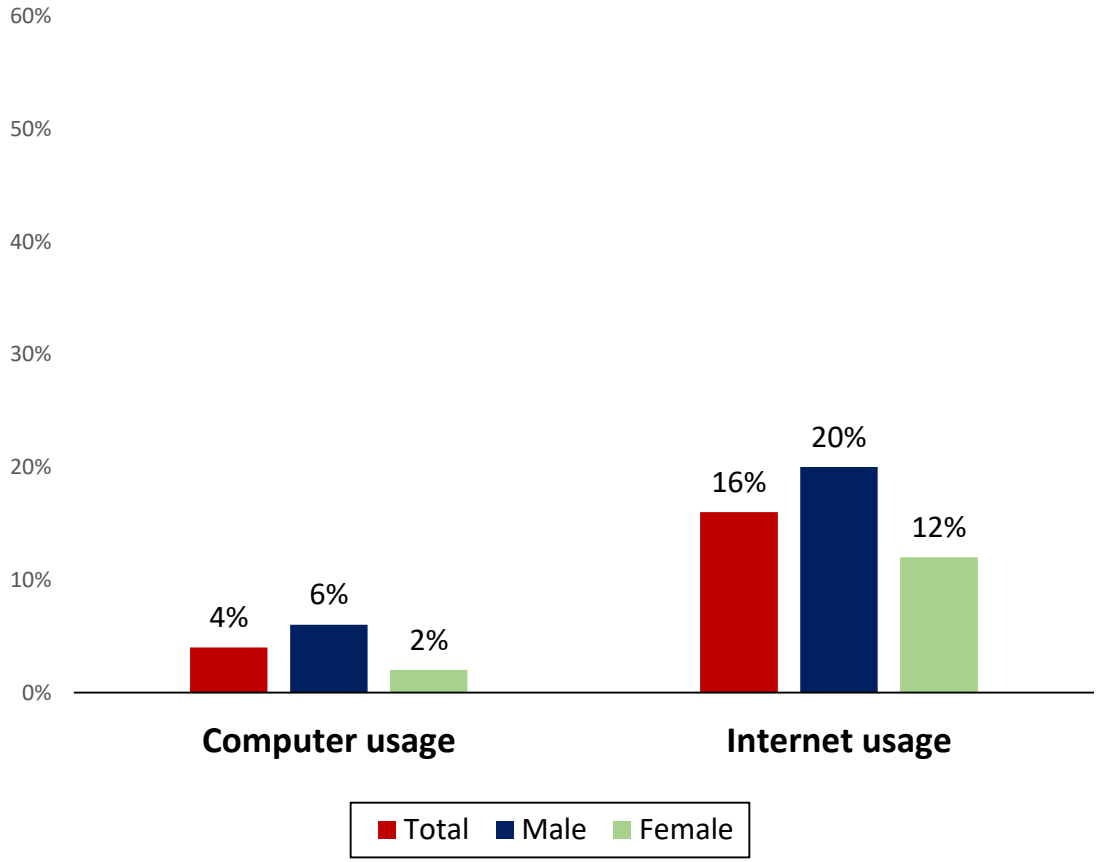


- **Mobile:** 96 % HHs use mobile phone, but 41% have smart phone access (ownership plus access to others).
- **Computer:** 9% HHs possess computer operating skills (computer ownership is 2.4%). 50% HHs have access to village computer shops.
- **Internet:** 46% HHs are aware of internet, 37% have internet connectivity (either broadband or mobile data or both) and 33% use internet at least once a week.

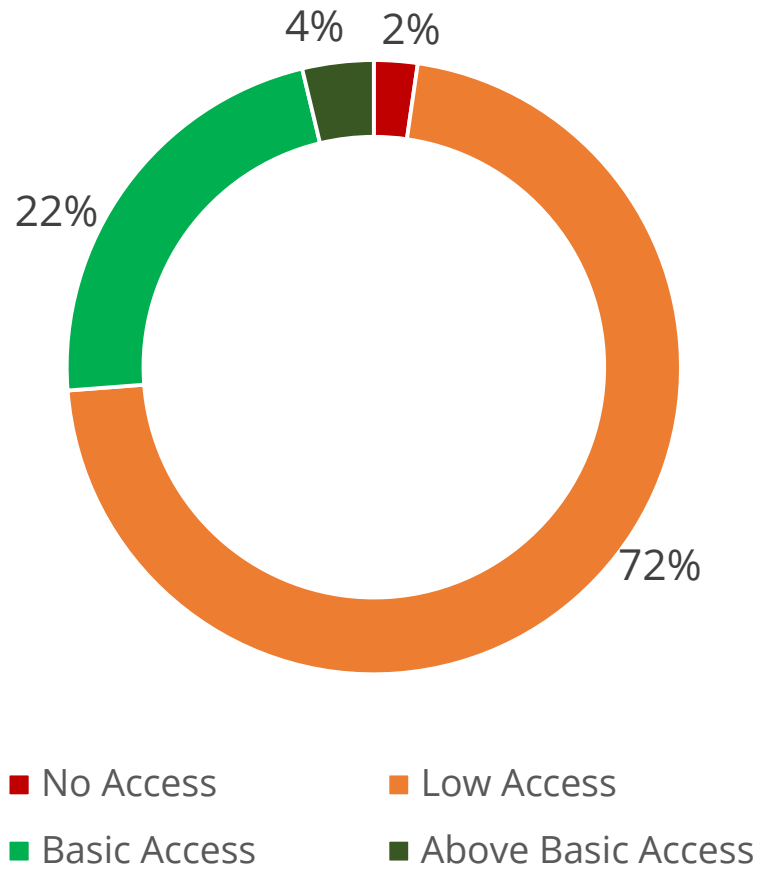
A Digression: Phone, Computer and Internet Usage at Individual Level (n= 27970)

- Almost half of the entire rural population do not use phone. However, among 16 – 45 age group (n=10860) the user rate is 80%.
- Very low rate of Internet usage (16%); Computer usage is only 4%.
- A significant gender inequality (against female) is visible in all cases.





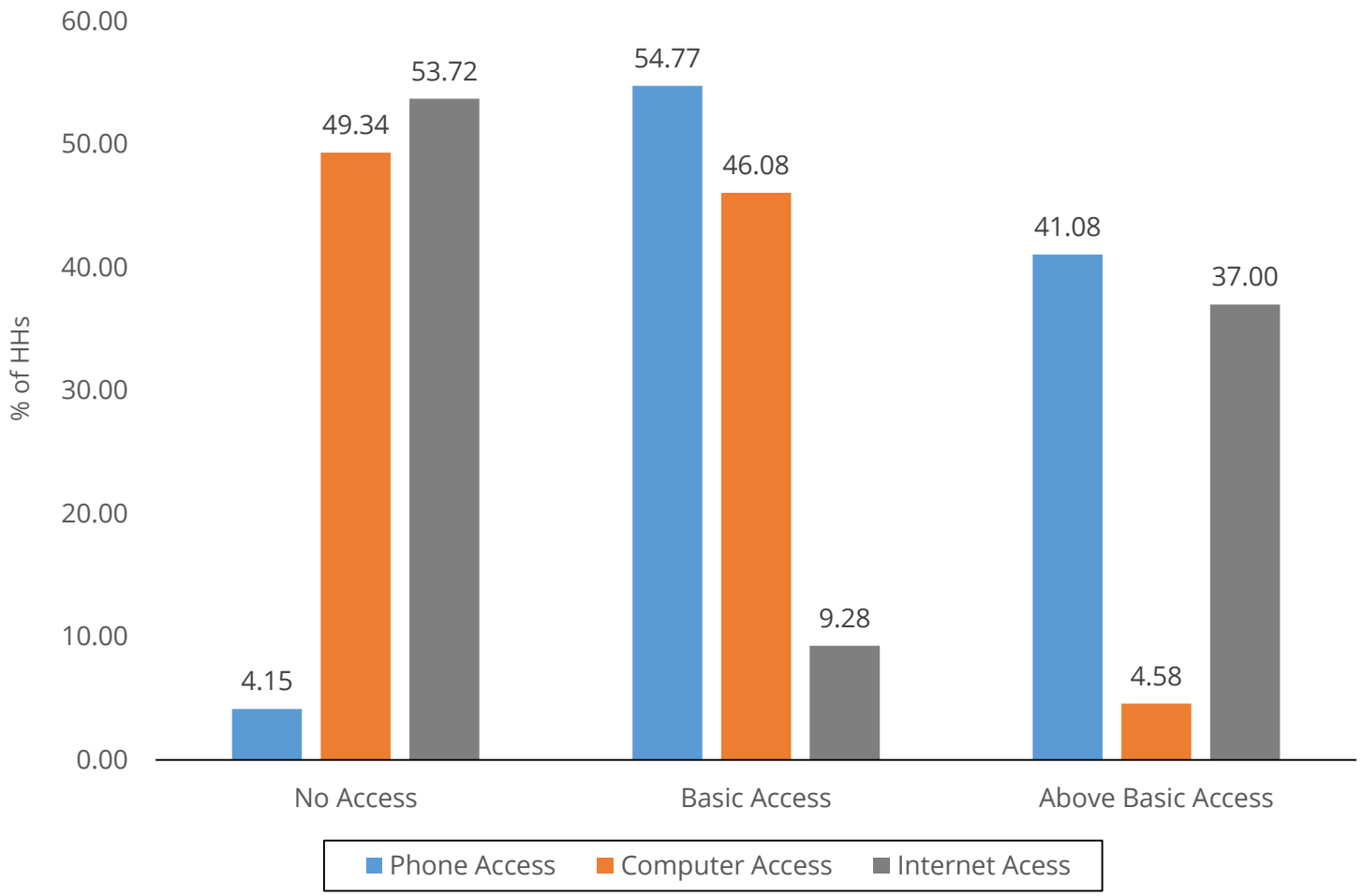
Household Classification Based on Digital Access



- Three-fourth of HHs have “below Basic” Digital Access.

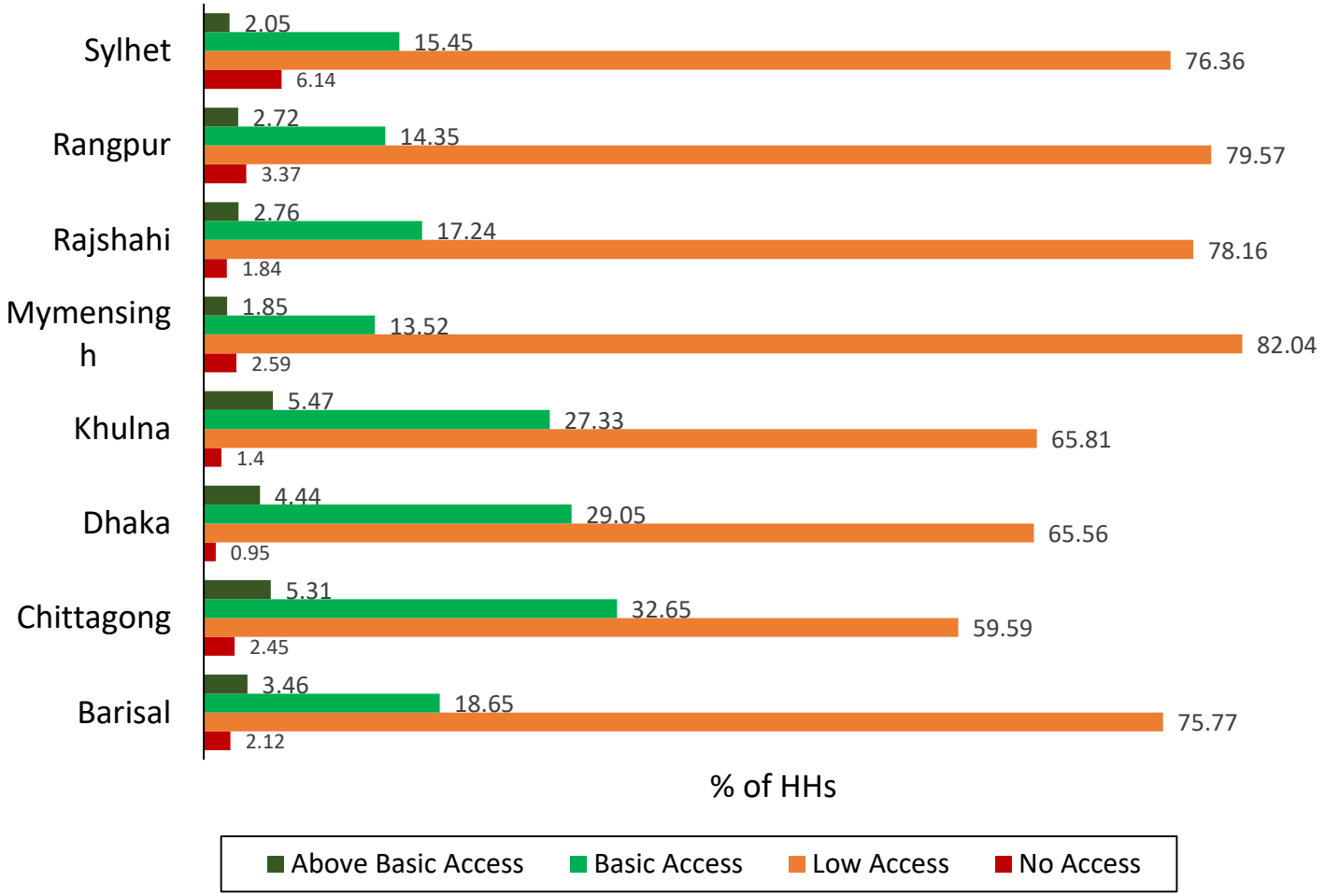
- Survey data shows that 2% households have “no access”, 72% households have “low access”, 22% households have “basic access” and 4% households have “above basic access”.

HH Classification: Domain-level Digital Access



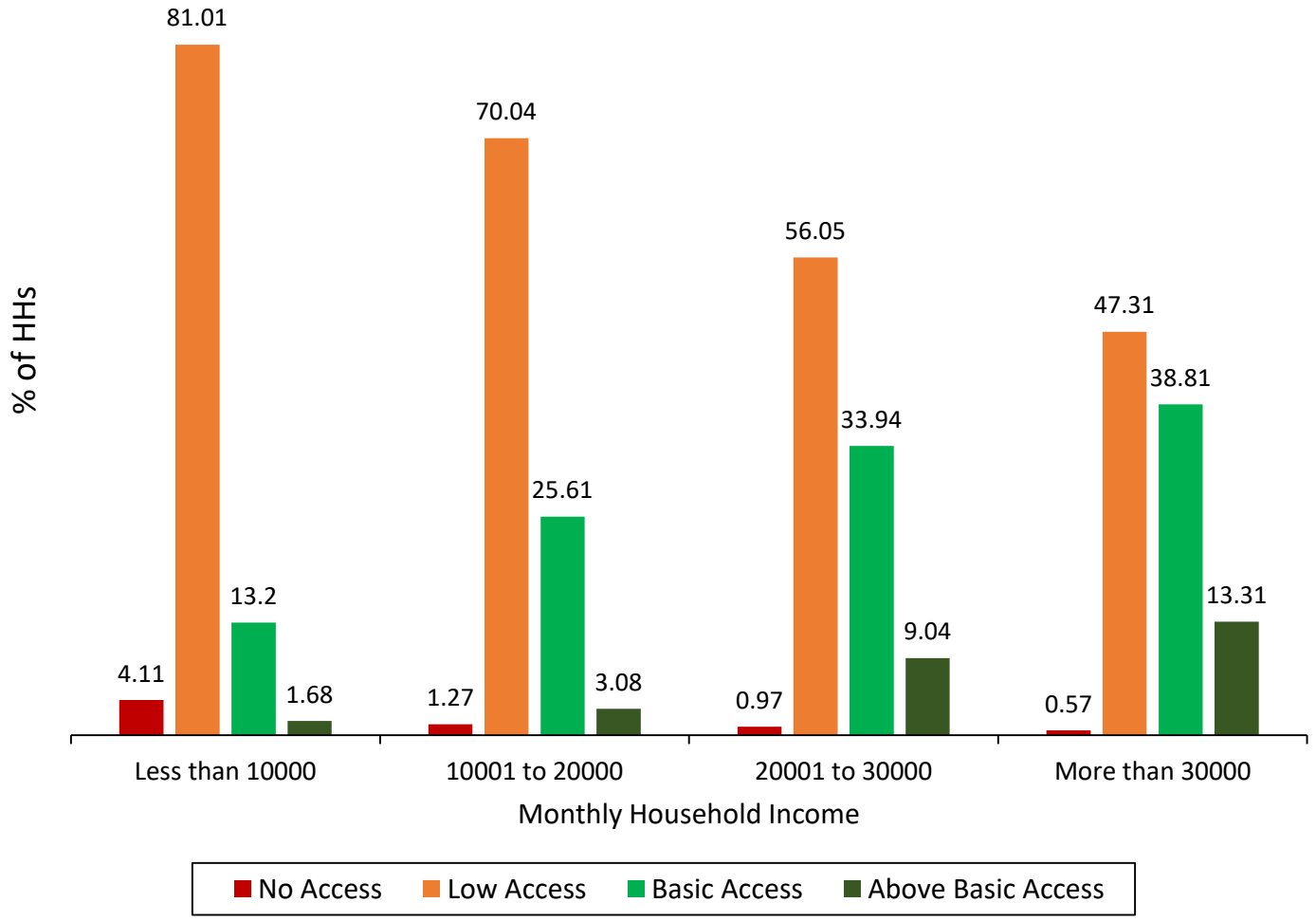
- **Mobile:** 96% HHs has basic or above basic Access.
- **Computer:** Half of the HH's have no access and only 5% have above basic access
- **Internet:** 54% HH have no access while 37% have above basic access

Digital Access and Regional Heterogeneity



- Statistically significant regional heterogeneity
- Chittagong, Dhaka, and Khulna divisions have better digital access
- Mymensingh, Rangpur and Sylhet divisions have relatively lower level of digital access.

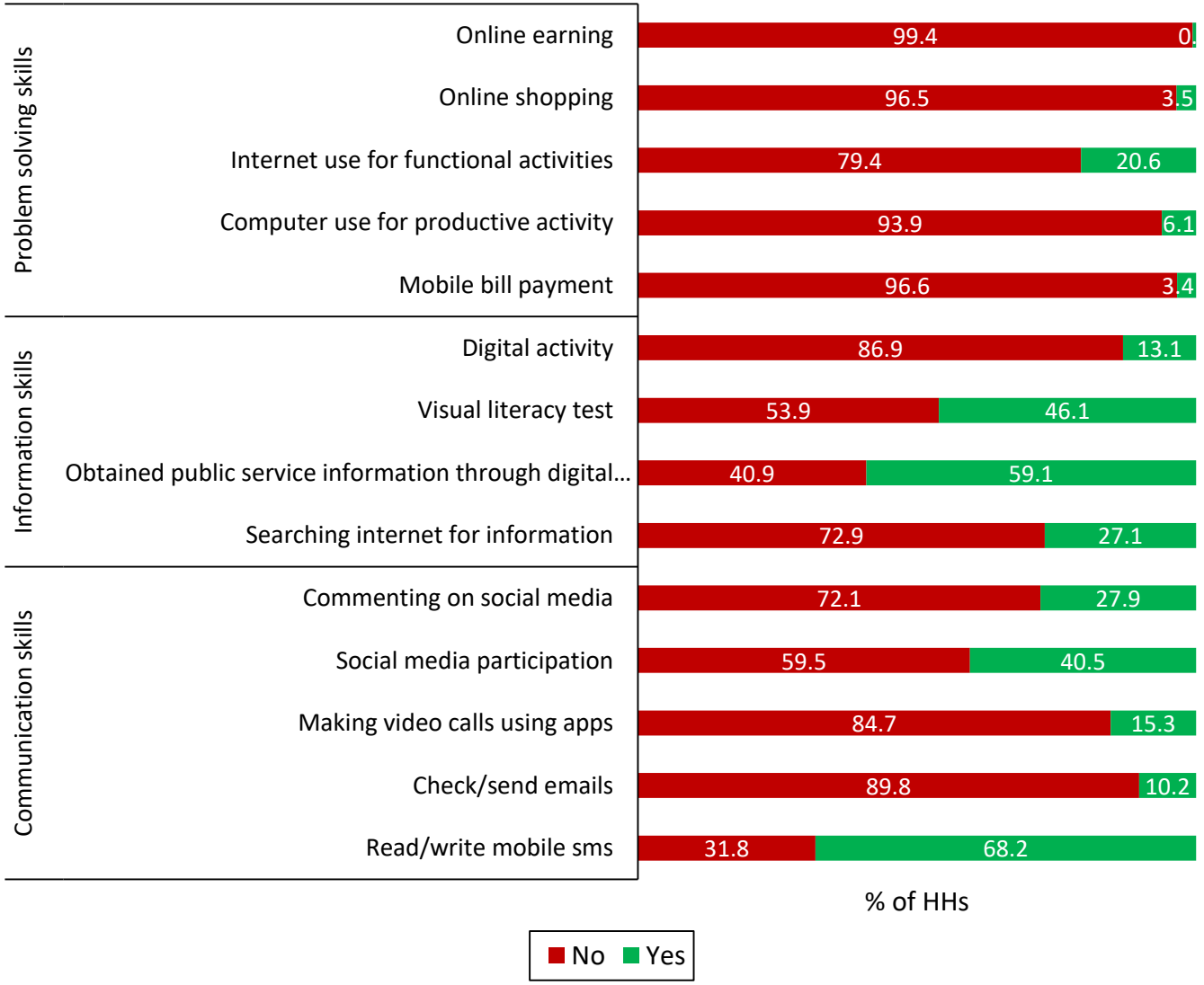
Income Disparity and Digital Access



- Strong, monotonic and statistically significant impact of income on digital access.
- The share of HHs with “basic” and “above basic” gradually increases as the income level of households increases.
- However, **even in the highest income bracket, almost half of households have below basic digital access**.

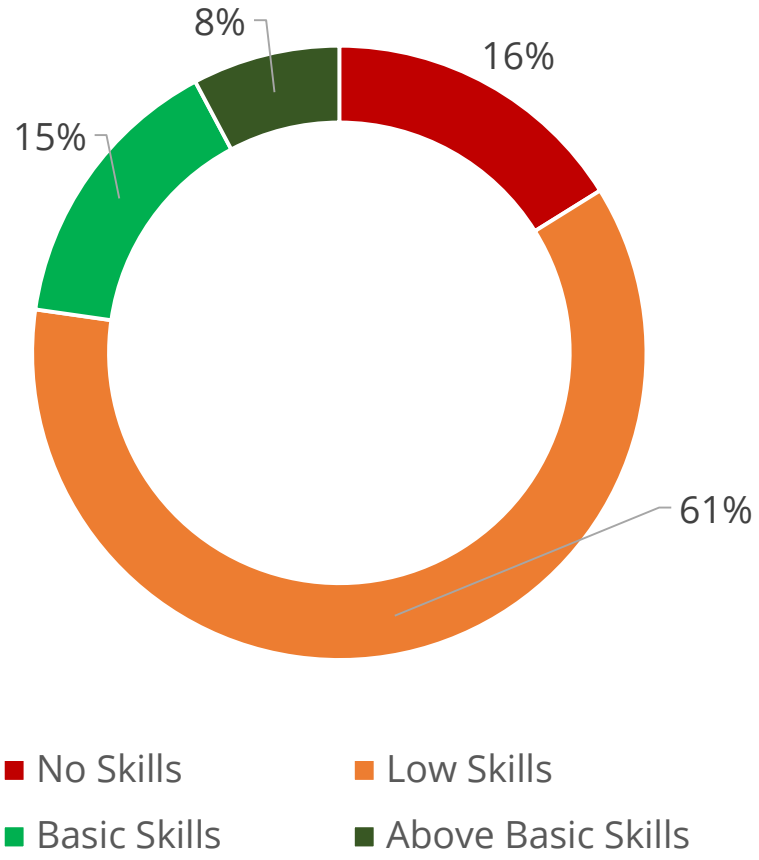
Digital Skills: Analysis and Findings

Problem Solving skills are at very low level



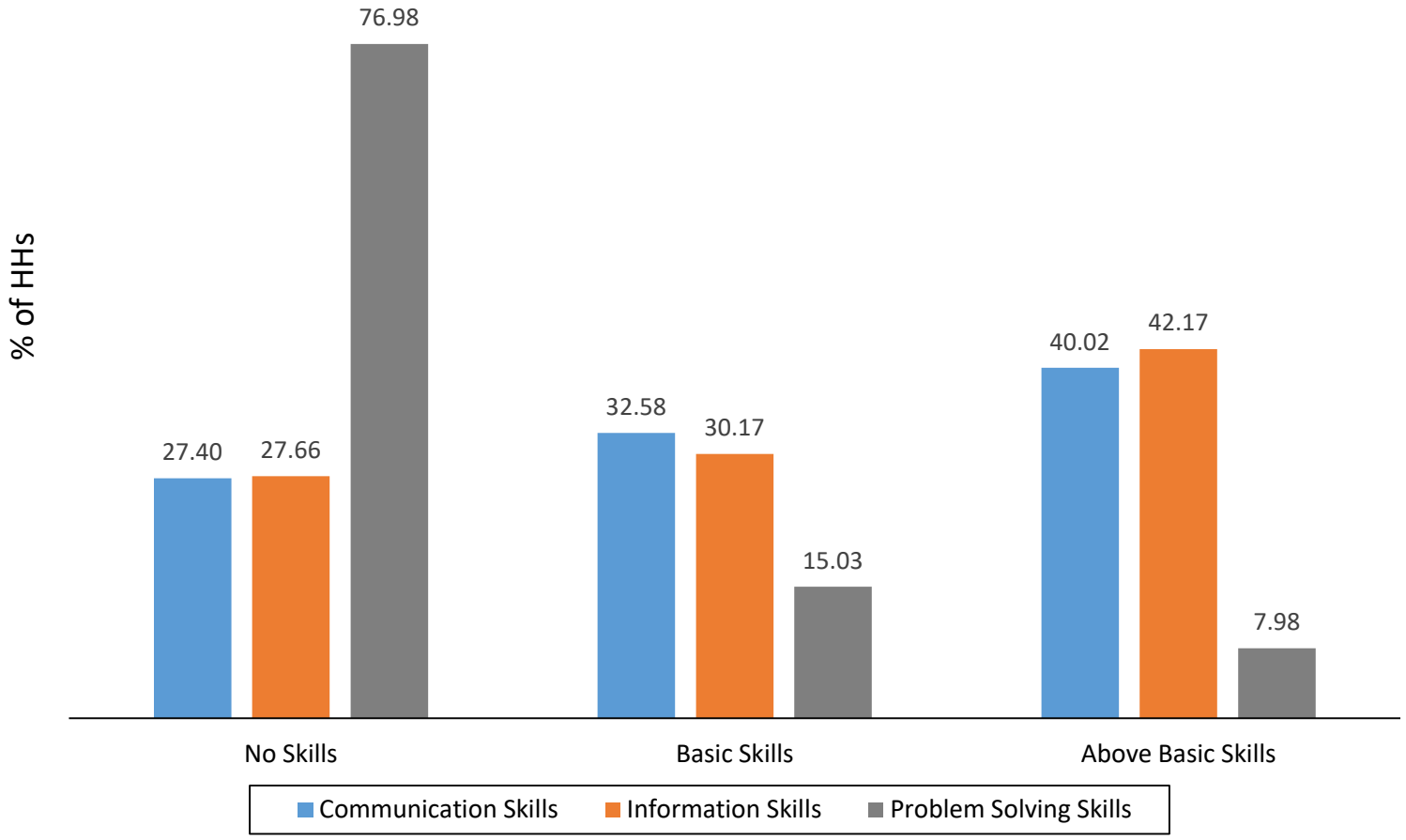
- Communication skills: 68% can read/write SMS, 10% can check/send emails, 15% can make video calls, 41% participate in the social media, and 28% can make comments on social media.
- Information skills: 27% can search internet, 59% obtained service related info via digital medium, 46% passed at least one visual literacy tasks (out of 5), 13% passed at least one digital activity task (out of 3).
- Problem solving skills: 20% use internet for functional activities, 6% use computer for productive activity, 3% pay bills via mobile, 3% have online shopping experience and less than 1% earn through online activities.

Household Classification Based on Digital Skills



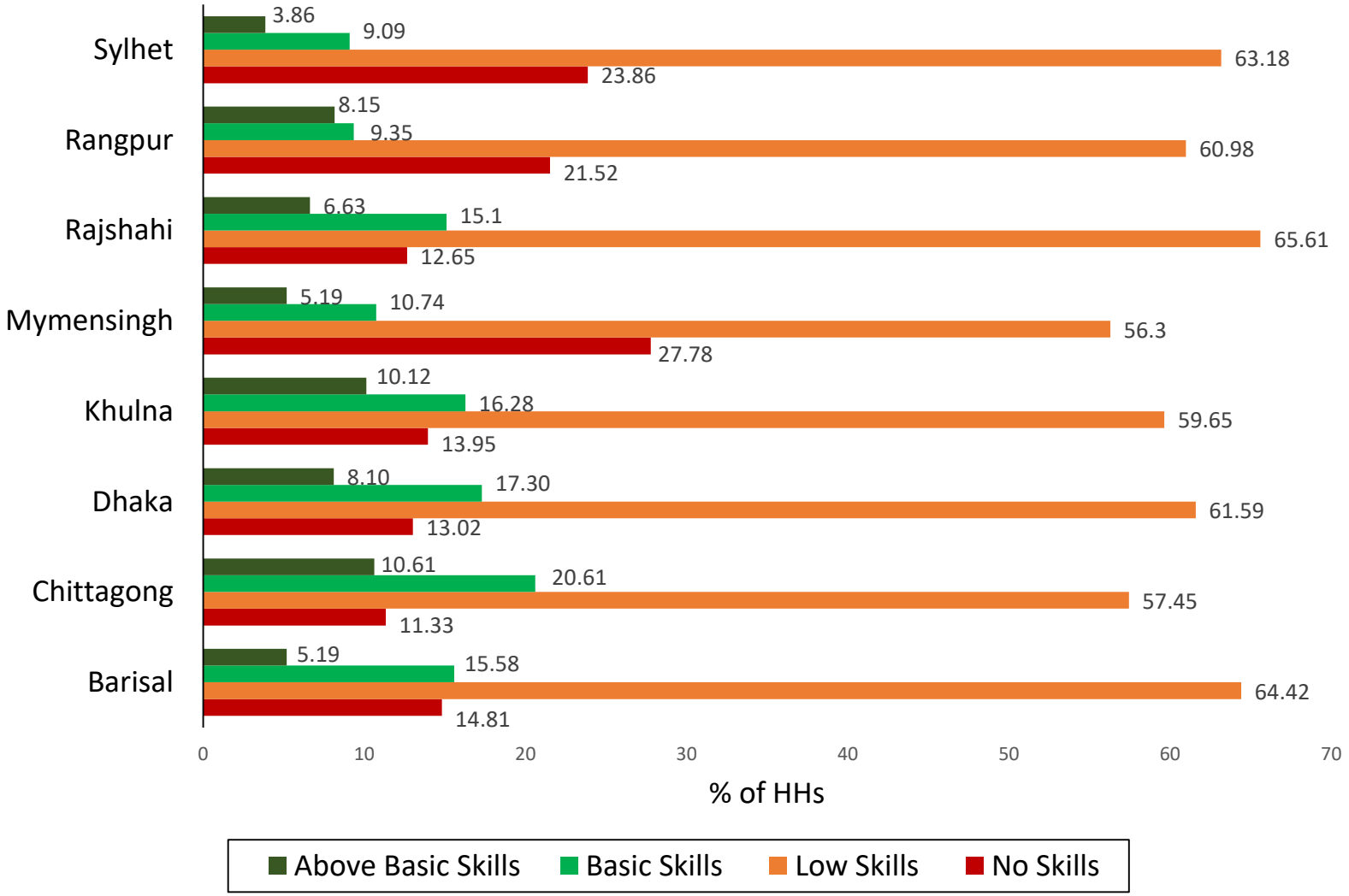
- In terms of digital skills, 61% HHs are categorized as “Low Skills”.
- 16% HHs have “no skills”
- 15% HHs have “basic skills”
- 8% HHs have “above basic skills”.

Household Classification Based on Domain-level Digital Skills



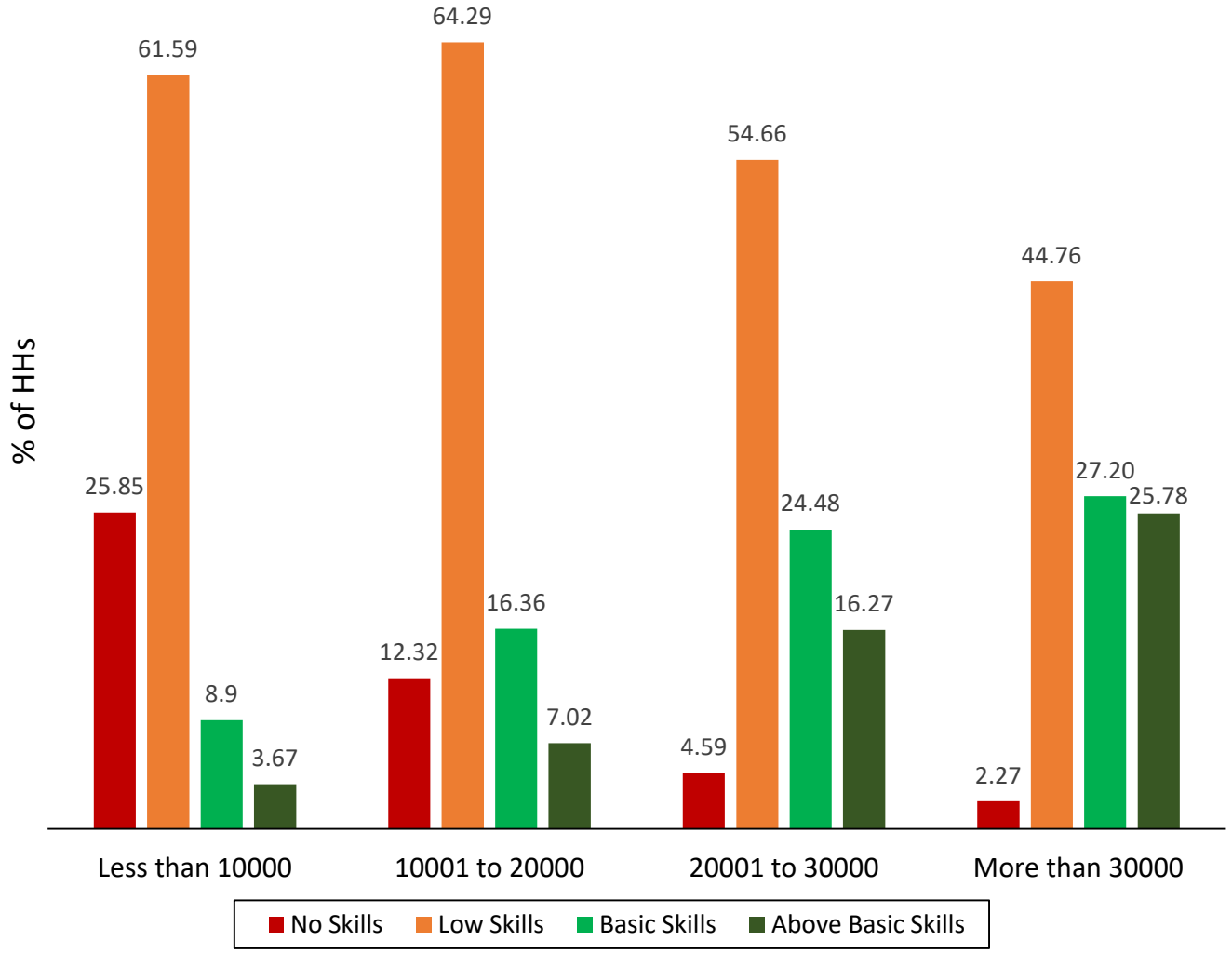
- Almost 80% HH have no problem solving skills.
- Information and Communication domains show similar patterns. Approximately one-quarter of HHs categorized as “no skills”. Notably, “above basic skills” category holds the highest proportion of household.

Digital Skills and Regional Heterogeneity



- Chittagong, Dhaka, and Khulna divisions possess higher digital skills
- While households in Mymensingh, Rangpur and Sylhet divisions have relatively lower level of digital skills.

Income Disparity and Digital Skills



- Strong and statistically significant association between income and digital skills level.
- % of HHs with “basic” and “above basic” digital skills gradually increases as income level increases.
- One-quarter of the households from the highest income group are categorized as “above basic” digital skills.
- However, even within this income bracket almost half of households classified as below basic digital skills.

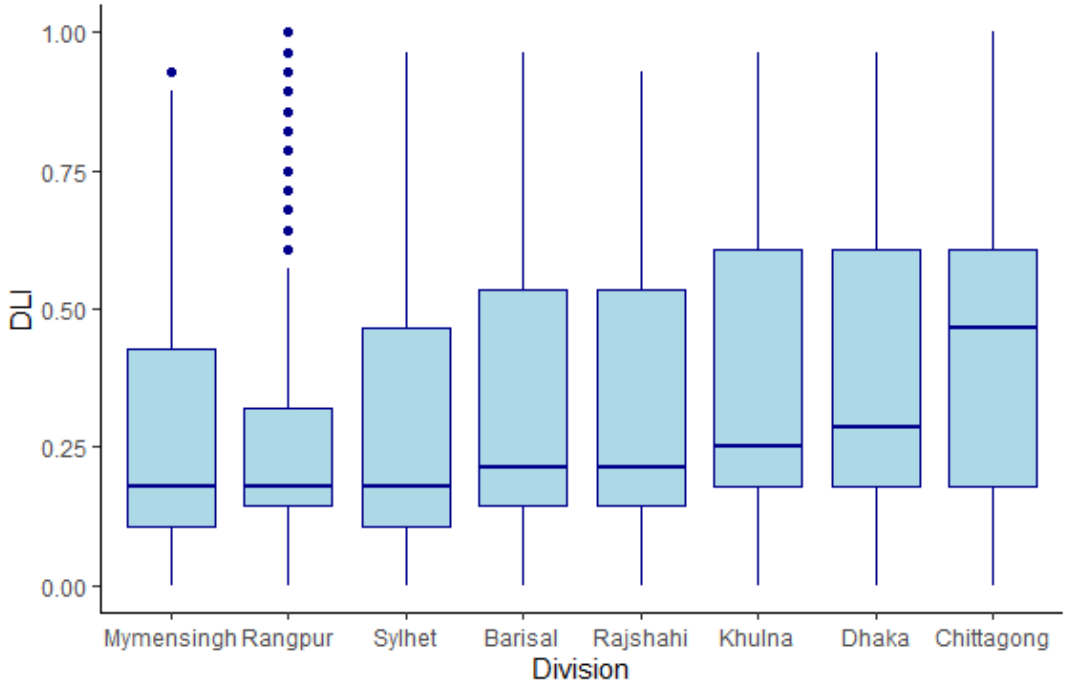
Digital Access and Digital Skills: How are they related?

- Low level digital access is a key indicator of digital divide that may lead to none or very low level of digital skills and further escalate the digital divide.
- An exploratory analysis demonstrates highly significant evidence of positive association between the digital access and digital skills status of households.
- Share of households with higher level of digital skills increases as the level of digital access increases. Among the households with “above basic” digital access, 74% classified as “above basic” digital skills.
- No household with “above basic” digital access status has been categorized as “no skills”; while no household from “no access” qualifies as “above basic” digital skills.
- More than two-third households with “no access” (“low access”) status are also classified as “no skills” (“low skills”).
- **Ensuring at least “basic access” to all domains (phone, computer and internet) for the rural people is a prerequisite to achieve an acceptable standard of digital skills.**

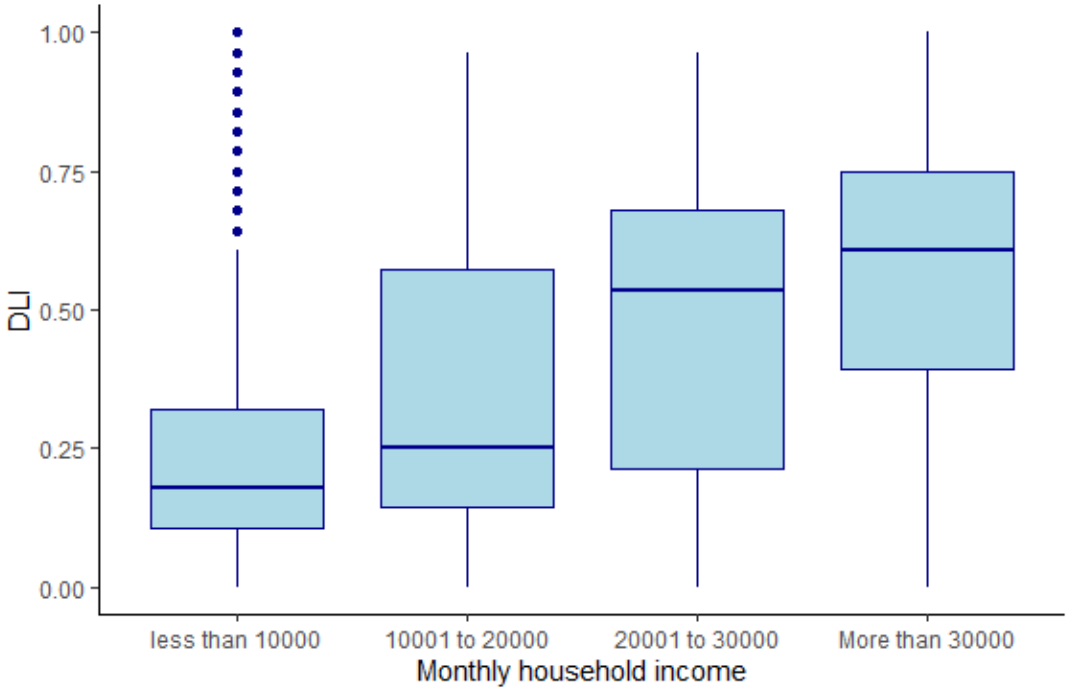
Digital Literacy (DLit_BIGD 1.0): Analysis and Findings

DLI: Evidence of Regional and Income Disparity

- Significant regional variation both in terms of median and IQR.
- Chittagong's median DLI score is considerably higher.



- The median DLI score increases as the household income grows.



Determinants (Key Factors) Analysis

Determinant Analysis: Specifications

- A multivariate logistic regression framework has been used.
- Digital access = f (HH level variables (household size, income), HH head's characteristics (age, education, gender, literacy, employment), location)
- Digital Skills =f (HH level variables (digital access, HH size, income), HH head's literacy, MDAP's characteristics (age, gender, education, literacy, employment), location).
- The dummy dependent variables takes 0 if HH belongs to "Below Basic" (i.e., "No" or "Low") category and 1 if HH belongs to "Basic or Above" category.
- Digital Literacy = f (HH level variables (size, income), household head's characteristics (gender, age and literacy), MDAP's characteristics (age, gender, education, literacy, employment), location).
- The Digital literacy dummy variables takes 0 if HH belongs to "Below Average (median)" category and 1 if HH belongs to "Above average (median)" category.

Results from Determinant analysis

Independent variables	Digital access	Digital skills	DLI
Characteristics of Household			
Monthly household income (Base: Up to 10,000 TK)	(+) sig	(+) sig	(+) sig
Household size (Base: Up to 4 members)	(+) sig	(+) insig	(+) sig
Digital access (Base: Below basic)		(+) sig	
Characteristics of household head			
Gender (Base: Female)	(-) insig		(-) sig
Age	(-) insig		(+) sig
Literacy (Base: Illiterate)	(+) sig	(+) sig	(+) sig
Education (Base: Below SSC)	(+) sig		
Employment (Base: Unemployed)	(-) sig		
Characteristics of the most digitally able person within the household			
Gender (Base: Female)		(+) sig	(+) sig
Age		(-) sig	(-) sig
Literacy (Base: Illiterate)		(+) sig	(+) sig
Education (Base: Below SSC)		(+) sig	(+) sig
Employment (Base: Unemployed)		(-) sig	(-) sig
Location			
Division (Base: Rangpur)	(+) sig	(+) sig	(+) sig

Note: (+) denotes positive coefficient, (-) denotes negative coefficient, sig: significant, insig: Insignificant

Determinant Analysis of Digital Access

- Evidence in favor of significant regional heterogeneity is found.
- Income has a strong, significant and increasing impact on digital access.
- Household size has a significant positive impact on the digital access.
- Literacy and education of HH head have significant and positive impact.
- Interestingly, employment status of the HH head has a significant negative impact.
- Gender and age of the household head do not have any significant effect.

Determinant Analysis of Digital Skills

- Positive and statistically significant effect of digital access, Income, HH head's literacy, MDAP's education and literacy on digital skills is found.
- Substantial geographical disparity is confirmed.
- A statistically significant gender inequality is found in favor of the male MDAP.
- Household size does not have any significant impact on digital skills.
- MDAP's employment status and age both have significant negative impact.

Determinant Analysis of Overall Digital Literacy

- Both education and literacy of the MDAP have significant positive impact.
- HH economic status has strong, significant and positive impact.
- Significant regional disparity is observed.
- Interestingly, female-headed household and HH with male MDAP are more likely to have better digital literacy.
- HH size and the literacy of the HH head show significant positive impact.
- Age of the HH head shows positive impact while age of the MDAP shows negative impact.
- The employment status of the MDAP has a significant negative impact.

Summary and Policy Questions

Summary of the findings

- For both digital access and skills, three-quarters of rural HHs are in the “below basic” category. Majority of them are classified as “low”.
- **Access:**
  4% HH do not use mobile phone and half of the HHs do not have access to computer (49%) and internet (54%).
- **Skills:**
  HHs are significantly lagging behind in problem solving (with 77% “no skills”). More than one-quarter HHs are classified to have no skills for both communication and information skills.
- Digital Access and Digital Skills are strongly and positively associated. **As the level of digital access increases, the share of households with higher level of digital skills rises.**

Summary of the findings

- **Significant geographical heterogeneity**:
  Chittagong, Dhaka, and Khulna are frontrunners
  Mymensingh, Rangpur and Sylhet are strugglers
- Strong and significant **income effect** on having a better digital access, skills and literacy
- **Digital access has significant positive impact on digital skills level of the household**.
- The gender of HH head no significant impact on digital access; however, **female-headed household and HH with male MDAP are more likely to have better digital literacy.**

Summary of the findings

- HH size have a significant positive impact on access and literacy, but not on skills.
- **The literacy and education of HH head and MDAP demonstrate significant and strong positive impact on digital access, skills, and literacy**.
- The age of the MDAP shows a negative impact on both digital skills and digital literacy.
- A counterintuitive finding is that unemployed MDAP (household head) has increased chance of achieving better digital skills and digital literacy (access).

Policy Questions

- This study provides robust evidence of existing digital divide and demand side obstacles (low level of access and skills) in the rural area. In view of the COVID-19 pandemic, digital access and skills become more relevant and urgent. Recent experience and struggle to target/identify the beneficiaries and to deliver safety-net support to them is a testimony of this.
- Few important policy questions to ponder:

✓ How can we develop a comprehensive National Digital Competency Framework, both at individual level and household level?

✓ How to ensure better digital access for rural area, particularly for computer and internet domain, to tackle the widespread problem of digital divide?

✓ What interventions can be taken to increase the digital skills level, particularly for problem solving skills?

✓ How the structural inequalities, such as regional heterogeneity and income, gender and educational disparity, can be addressed in the policy framework?

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Digital Inclusion Series

Ep 1: Digital Literacy in Rural Bangladesh

Sunday, 13 September | 12:00 pm