



Japan Bilingual Publishing Co.

Journal of Behavioral Economics and Policy

<https://ojs.bilpub.com/index.php/jbep>

ARTICLE

Behavioral Dimensions of the Digital Gender Divide: Women's Access to Information and Communication Technology in Rural and Semi-Urban Bangladesh

Shakib Hasan 

Department of Gender and Development Studies, Begum Rokeya University, Rangpur 5400, Bangladesh

ABSTRACT

The expansion of Information and Communication Technologies (ICTs) has transformed access to communication, education, employment, and social participation across developing countries. However, unequal digital access continues to reinforce gender disparities, particularly among women in rural Bangladesh. This study examines the behavioral and structural dimensions of the digital gender divide by comparing women's ICT access and usage in rural and semi-urban areas of Bangladesh. A mixed-methods exploratory design was employed, combining survey data from 276 respondents with qualitative interviews and thematic analysis. The findings reveal substantial inequalities in smartphone ownership, internet connectivity, digital literacy, and independent ICT usage between rural and semi-urban women. Rural women experience stronger barriers associated with poverty, infrastructural limitations, patriarchal restrictions, and limited technological skills. The study further identifies behavioral constraints such as fear of social criticism, family surveillance, reputational concerns, and perceived online risks as significant factors limiting women's digital participation. Although ICT access contributes positively to women's empowerment by improving access to information, communication, and participation in household decision-making, empowerment outcomes remain uneven due to persistent socio-cultural inequalities. The study argues that reducing the digital gender divide requires both technological expansion and behaviorally informed public policies, including community-based digital literacy programs, awareness campaigns, and interventions addressing

*CORRESPONDING AUTHOR:

Shakib Hasan, Department of Gender and Development Studies, Begum Rokeya University, Rangpur 5400, Bangladesh;
Email: shakibhasan.june15@gmail.com

ARTICLE INFO

Received: 14 January 2026 | Revised: 28 April 2026 | Accepted: 5 May 2026 | Published Online: 27 June 2026
DOI: <https://doi.org/10.55121/jbep.v2i1.1277>

CITATION

Hasan, S., 2026. Behavioral Dimensions of the Digital Gender Divide: Women's Access to Information and Communication Technology in Rural and Semi-Urban Bangladesh. *Journal of Behavioral Economics and Policy*. 2(1): 87–98. DOI: <https://doi.org/10.55121/jbep.v2i1.1277>

COPYRIGHT

Copyright © 2026 by the author(s). Published by Japan Bilingual Publishing Co. This is an open access article under the Creative Commons Attribution-NonCommercial 4.0 International (CC BY 4.0) License (<https://creativecommons.org/licenses/by/4.0>).

restrictive gender norms. The research contributes to the literature on behavioral economics, gender, and digital inclusion by demonstrating that women's digital exclusion is both a structural and behavioral policy challenge.

Keywords: Digital Gender Divide; ICT Access; Women's Empowerment; Behavioral Economics; Rural Bangladesh; Digital Inclusion

1. Introduction

Advances in Information and Communication Technologies (ICT) have become central to contemporary development, expanding access to information, education, finance, and social participation^[1]. Yet access to digital resources remains highly unequal, producing a digital gender divide rooted in gender, geography, and socio-economic status^[2,3]. From a behavioral economics perspective, women's ICT access is influenced not only by economic resources but also by social norms, intra-household bargaining, perceived risks, and bounded rationality. In many Bangladeshi households, women's technology use is shaped by family expectations, fear of social criticism, and concerns regarding online safety. These behavioral frictions affect women's digital decision-making and limit independent participation in digital spaces. Therefore, understanding the digital gender divide requires integrating behavioral insights with Gender and Development (GAD) and Capability approaches to explain how social and psychological constraints interact with structural inequalities.

In Bangladesh, initiatives under the "Digital Bangladesh" vision—such as Access to Information (a2i) and Union Digital Centers—have expanded ICT infrastructure, but women, especially in rural areas, still lag behind in device ownership, connectivity, and digital skills^[3]. Semi-urban women generally benefit from better connectivity and educational institutions, yet still confront gendered power relations that limit meaningful digital engagement^[3,4]. The study argues that regional inequality and gender inequality are deeply interconnected rather than mutually exclusive. Women in rural areas experience compounded disadvantages because gender-based restrictions intersect with infrastructural and socio-economic limitations, producing layered forms of digital exclusion. Existing research often focuses on national aggregates or simple rural–urban splits and rarely compares women's ICT experiences across rural and semi-urban settings^[5,6]. This study addresses that gap

by examining patterns of ICT access, key barriers, and the relationship between access and empowerment^[7]. Guided by Gender and Development (GAD) and Capability frameworks, the article argues that the digital gender divide is a multidimensional social phenomenon rather than a purely technical gap^[7,8]. This study is guided by three interconnected frameworks: the Gender and Development (GAD) approach, Sen's Capability Approach, and a behavioral-public policy perspective. The GAD framework explains how gendered power relations shape women's access to resources and opportunities. The Capability Approach emphasizes that ICT access can expand women's choices, agency, and participation in social and economic life. Additionally, a behavioral perspective highlights how social norms, perceived risks, family influence, and behavioral constraints shape women's technology adoption and digital participation. Together, these frameworks help explain why unequal ICT access persists despite improvements in digital infrastructure. To guide the study, the following research questions were developed:

1. How do patterns of ICT access and usage differ between rural and semi-urban women in Bangladesh?
2. What behavioral, socio-cultural, and structural barriers influence women's independent ICT use?
3. To what extent does ICT access contribute to women's empowerment and participation in decision-making?

Literature Review and Research Gap

The digital gender divide has emerged as a major concern in development studies, particularly in developing countries where unequal access to Information and Communication Technologies (ICTs) reflects broader social and economic inequalities^[9,10]. Existing research demonstrates that women across South Asia experience lower levels of smartphone ownership, internet access, and digital literacy compared to men due to structural inequalities, poverty, limited

educational opportunities, and patriarchal social norms^[11,12]. In Bangladesh, despite significant governmental initiatives under the “Digital Bangladesh” vision, women continue to face substantial barriers in accessing and using digital technologies independently^[13].

Previous studies have largely focused on national-level digital inequality or broad rural–urban comparisons without adequately examining the differences between rural and semi-urban women’s ICT experiences^[14]. Moreover, many existing studies explain the digital gender divide primarily through infrastructural or economic limitations while giving less attention to behavioral dimensions influencing women’s digital participation. Behavioral economics literature suggests that technology adoption is often shaped by social conformity, risk aversion, status quo bias, fear of social sanctions, and bounded rationality^[15,16]. In conservative social contexts, women’s technology use may be restricted not only by affordability but also by concerns regarding morality, social reputation, and family control.

This study addresses these gaps by comparatively examining women’s ICT access in rural and semi-urban Bangladesh through an integrated framework combining Gender and Development (GAD), Capability Approach, and behavioral public policy perspectives. Unlike previous research, the study highlights how behavioral and socio-cultural mechanisms interact with structural inequalities to shape women’s digital inclusion and empowerment outcomes.

2. Materials and Methods

2.1. Research Design

A mixed-methods design combines quantitative survey data with qualitative narratives to capture both the extent and the meanings of women’s ICT use in different locations.

2.2. Study Area and Population

Fieldwork was conducted in selected rural and semi-urban areas including Maheshpur Upazila of Jhenaidah district and Rangpur Sadar Upazila, chosen to represent contrasting infrastructural and socio-economic conditions. The target population comprised women aged 18–50 engaged in education, household work, employment or small business activities.

2.3. Sampling and Sample Size

Purposive sampling selected respondents with actual or potential ICT exposure. A total of 276 respondents were surveyed. For comparative analysis, 212 women (154 rural and 58 semi-urban) were selected, while urban responses were retained only for contextual reference. Urban responses were collected primarily to provide broader contextual understanding regarding national digital inequality patterns. However, because the primary objective of the study was to compare women’s ICT experiences in rural and semi-urban settings, urban data were not included in the main comparative statistical analysis.

2.4. Data Collection

Data were collected through a structured Bangla questionnaire administered through face-to-face interviews to accommodate respondents with varying literacy levels^[17]. The questionnaire included sections on socio-demographic characteristics, smartphone ownership, internet access, frequency of ICT use, digital literacy, perceived barriers, and empowerment-related indicators such as decision-making participation, confidence, and access to information.

In addition to the survey, qualitative data were collected through 18 semi-structured interviews conducted with selected rural and semi-urban women. Participants for interviews were purposively selected based on ICT exposure, age variation, and willingness to participate. Each interview lasted approximately 25–40 min and focused on women’s experiences regarding family control, online safety concerns, digital opportunities, and social perceptions surrounding technology use. Secondary data were also consulted from government reports, academic literature, development agency publications, and institutional databases to contextualize the findings^[18,19].

2.5. Variables and Analysis

Independent variables included age, education, income, occupation and place of residence; ICT variables covered device ownership, internet access, usage frequency and digital skills, while dependent variables captured empowerment outcomes such as confidence, decision-making and livelihood opportunities^[20]. Digital literacy was operationalized

through respondents' self-reported ability to use smartphones, internet browsing, social media applications, online communication tools, and digital services independently. Independent ICT use referred to women's ability to access and use mobile phones or internet services without supervision, restriction, or permission from family members. Empowerment indicators included participation in household decision-making, confidence in communication, access to information, educational opportunities, and perceived autonomy in daily activities.

In addition to descriptive statistics, comparative cross-tabulation techniques were used to examine variations between rural and semi-urban respondents. Where differences are described as statistically meaningful, chi-square tests were used to assess associations between location and ICT access indicators. Due to limitations in time, resources, and sample size, advanced multivariate modeling was not conducted. Therefore, findings should be interpreted as exploratory rather than nationally representative. Descriptive statistics and cross-tabulation were used to compare rural and semi-urban women, with secondary MDAP indicators providing national-level context on intra-household digital hierarchies^[21].

2.6. Data Analysis Techniques

Quantitative data were analyzed using descriptive statistics, frequency distributions, percentage analysis, and comparative cross-tabulation techniques to identify differences between rural and semi-urban respondents. Chi-square tests were conducted where appropriate to examine associations between geographical location and selected ICT access indicators. Due to limitations in sample size and the exploratory nature of the research, advanced multivariate modeling was not conducted.

Qualitative responses obtained from interviews and open-ended questionnaire items were analyzed using inductive thematic coding techniques conducted manually by the author. Interview transcripts and field notes were reviewed repeatedly to identify recurring themes such as patriarchal control, social restrictions, online harassment concerns, financial barriers, and behavioral limitations affecting ICT use. Coding categories were refined through repeated comparison of responses to ensure thematic consistency. Qualitative findings were triangulated with quantitative survey patterns

to provide deeper contextual interpretation and strengthen the credibility of the analysis.

2.7. Reliability and Validity

To ensure the reliability and validity of the data, the survey questionnaire was carefully designed and pre-tested before field implementation. Consistency in data collection procedures and triangulation of quantitative and qualitative data enhanced the credibility of the findings.

2.8. Ethical Considerations

The study followed standard ethical principles for social science research, including voluntary participation, confidentiality, anonymity, and informed consent. Ethical permission for fieldwork was granted by the Department of Gender and Development Studies, Begum Rokeya University, Rangpur, prior to data collection conducted in January–February 2026 (Approval Date: 5 January 2026). The study followed institutional ethical guidelines regarding confidentiality, anonymity, voluntary participation, and informed consent. All respondents participated voluntarily and were informed about the objectives and use of the research data.

2.9. Data Availability

The data supporting the findings of this study are not publicly available due to privacy and ethical considerations. However, they may be made available by the author upon reasonable request. Further methodological details and supporting information are available in the **Supplementary Materials** accompanying this article.

3. Results

This section presents the empirical findings of the study on the digital gender divide and women's access to ICT in rural and semi-urban Bangladesh. The results are derived from survey data of 276 respondents, where women constituted approximately 72.83%, with a majority from rural areas (55.80%) and a significant proportion aged 18–25 (51.45%). These demographic characteristics indicate that the findings primarily reflect the experiences of young and economically vulnerable women^[22]. The analysis reveals clear disparities in ICT access, usage, and empowerment outcomes between

rural and semi-urban women, confirming the persistence of a digital gender divide.

3.1. Socio-Demographic Characteristics and ICT Access

The study shows that socio-economic status and geographic location strongly influence ICT access. A large proportion of respondents belonged to low-income households, with nearly one-third earning below 10,000 BDT per month, indicating financial constraints as a major barrier to digital inclusion^[23].

Device Ownership and Internet Connectivity

The results indicate substantial differences in device ownership and internet access:

- Semi-urban women show higher smartphone ownership and internet usage;
- Rural women depend more on shared or male-controlled devices;
- Internet connectivity is weaker and less reliable in rural areas;
- Digital literacy levels are comparatively lower among rural respondents.

Key Statistical Patterns

1. Smartphone ownership is comparatively higher among semi-urban women;
2. Rural women experience limited independent access to ICT devices;
3. Internet usage frequency is higher in semi-urban contexts;
4. Gender-based control over devices restricts women's autonomy.

These findings align with previous studies on ICT inequality in developing countries^[24,25].

3.2. Internet Usage Patterns and Functional Engagement

The findings reveal that ICT usage among women is primarily concentrated in non-economic activities. Most respondents reported using ICT for communication and social purposes rather than productive or income-generating uses.

- Communication (calls, messaging) is the dominant use;
- Educational use is increasing among younger respondents;
- Limited use of ICT for business or financial activities;
- Social media use is mediated by family control and safety concerns.

This suggests that access to ICT does not automatically translate into economic empowerment, consistent with earlier research^[26,27].

3.3. Barriers to ICT Access and Use

The study identifies multiple structural and socio-cultural barriers affecting women's digital participation:

- Patriarchal norms restricting women's independent ICT use;
- Financial limitations affecting device ownership;
- Lack of digital literacy and training opportunities;
- Fear of online harassment and social stigma;
- Poor infrastructure and network coverage in rural areas.

These barriers interact to produce layered digital exclusion, particularly for rural women. Beyond structural barriers, behavioral factors also influenced women's ICT engagement. Many respondents expressed fear of social judgment, family disapproval, and online harassment, which discouraged independent internet use. In several cases, women avoided using smartphones publicly to prevent criticism regarding morality and social reputation. These findings demonstrate how behavioral and normative pressures shape digital participation alongside economic constraints.

3.4. ICT and Women's Empowerment Outcomes

The results indicate a positive but uneven relationship between ICT access and women's empowerment.

Women with greater ICT access reported:

- Increased participation in household decision-making;
- Improved access to information and education;
- Greater awareness of rights and opportunities;
- Enhanced social connectivity.

However, rural women remain disadvantaged due to limited autonomy and structural constraints. This supports

empowerment theories emphasizing access, agency, and outcomes^[28].

3.5. Figures, Tables and Schemes

Figure 1 illustrates how socio-economic, cultural, and infrastructural factors influence ICT access and empowerment outcomes.

The results presented in **Table 1** show that semi-urban

women consistently outperform rural women across all indicators of ICT access and usage. The largest gap is observed in independent usage, indicating that autonomy remains a key issue in rural contexts.

Figure 2 shows: (1) comparison of device ownership between rural and semi-urban women; (2) relationship between ICT access and empowerment outcomes.

Table 2 highlights the structural barriers and their impact on empowerment outcomes.

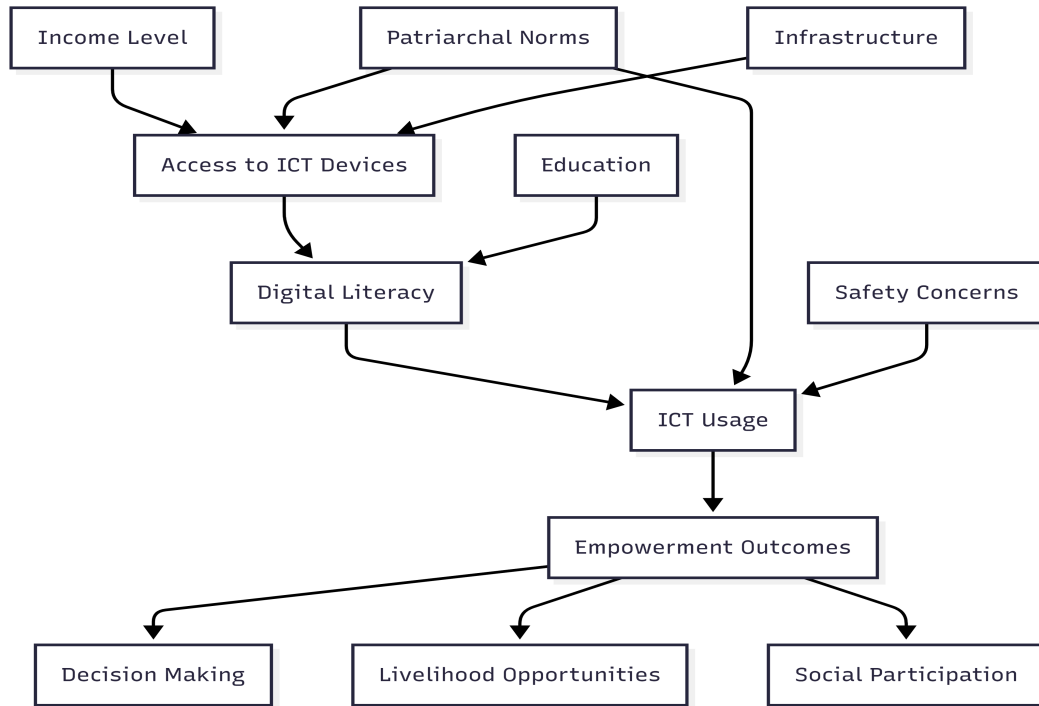


Figure 1. Determinants of ICT Access and Empowerment Outcomes.

Table 1. ICT Access and Usage Comparison.

Indicator	Rural Women (%)	Semi-Urban Women (%)
Smartphone Ownership	35	68
Internet Access	28	61
Independent Usage	20	49
Digital Literacy	25	54

Source: Author's compilation.

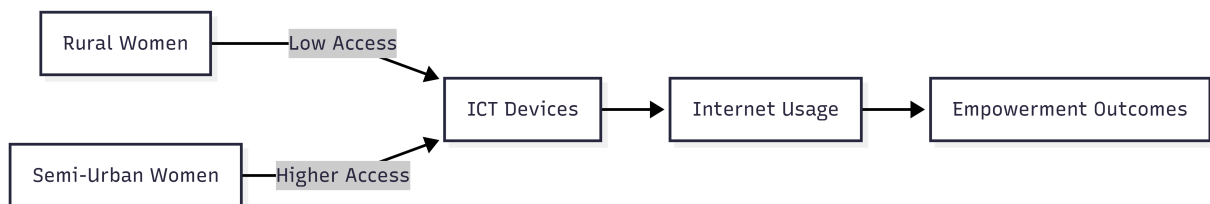


Figure 2. ICT Access Disparities.

Table 2. ICT Barriers and Empowerment Indicators.

Factors	Rural Women	Semi-Urban Women	Impact
Financial Constraints	High	Moderate	Limits access
Patriarchal Control	Very High	High	Reduces autonomy
Digital Literacy Gap	High	Moderate	Skill barrier
Safety Concerns	Moderate	High	Limits usage
Empowerment Outcomes	Low	Moderate	Unequal benefit

Note: The labels “High,” “Moderate,” and “Very High” are based on comparative interpretation of survey response frequencies and qualitative findings rather than standardized quantitative scales.

Source: Author’s compilation.

3.6. Interpretation of Results

The findings demonstrate that the digital gender divide in Bangladesh is shaped by the intersection of gender, geography, and socio-economic status. While semi-urban women benefit from better infrastructure and exposure, rural women face compounded disadvantages. Importantly, the results show that ICT access alone is insufficient for empowerment, as social norms and power relations continue to constrain women’s digital participation. These findings are consistent with broader literature on gender and digital inequality^[16,24].

3.7. Summary of Findings

Overall, the results indicate that:

- There is a clear digital gender divide between rural and semi-urban women;
- Socio-cultural barriers play a critical role in limiting ICT use;
- ICT contributes to empowerment, but outcomes are uneven;
- Structural inequalities must be addressed to ensure inclusive digital development.

4. Discussion

This section interprets the findings of the study in relation to existing literature, theoretical assumptions, and research objectives. The discussion highlights how the digital gender divide manifests differently across rural and semi-urban contexts in Bangladesh and examines its implications for women’s empowerment.

4.1. Interpretation of ICT Access and Usage Patterns

The findings demonstrate a clear disparity in ICT access between rural and semi-urban women. Semi-urban respondents reported higher ownership of smartphones, better internet connectivity, and more frequent digital engagement. In contrast, rural women showed limited access, often relying on shared or male-controlled devices. These results align with previous studies^[10,13] which suggest that geographical location significantly influences digital inclusion. However, the present study extends this understanding by showing that access alone does not ensure autonomy, as many women even in semi-urban areas lack control over ICT use.

4.2. Socio-Cultural and Economic Barriers

The research identifies multiple barriers shaping women’s digital exclusion:

- Patriarchal norms restricting women’s independent ICT use
- Financial constraints limiting device ownership
- Fear of online harassment and social stigma
- Limited digital literacy and training opportunities

These findings strongly support the arguments of Gender and Development scholars, who emphasize that technology access is embedded within broader gendered power relations^[8,10] and emphasize that technology access is embedded within power relations. As shown in **Table 3**, rural women experience greater structural and socio-cultural barriers to ICT access than semi-urban women.

Table 3. Comparative Barriers to ICT Access.

Barrier Type	Rural Women (%)	Semi-Urban Women (%)	Interpretation
Financial Constraints	High	Moderate	Income gap affects access
Patriarchal Control	Very High	High	Strong cultural restriction
Digital Literacy Gap	High	Moderate	Training disparity

Table 3. Cont.

Barrier Type	Rural Women (%)	Semi-Urban Women (%)	Interpretation
Safety Concerns	Moderate	High	Fear of online harassment
Infrastructure Issues	High	Low	Rural connectivity problem

Note: The labels “High,” “Moderate,” and “Very High” are based on comparative interpretation of survey response frequencies and qualitative findings rather than standardized quantitative scales.

Source: Author’s compilation.

4.3. ICT and Women’s Empowerment

The study confirms a positive relationship between ICT access and women’s empowerment. Women with better access to ICT reported:

- Increased participation in decision-making
- Improved access to education and information
- Enhanced livelihood opportunities

This supports the Capability Approach^[7] and the empowerment perspective proposed by Kabeer^[10]. However, the findings also reveal that empowerment outcomes are uneven and conditional. Rural women, even when having access, often cannot fully utilize ICT due to structural and cultural limitations. Qualitative narratives further revealed that many rural women experienced restricted autonomy despite having physical access to smartphones. Several respondents reported needing permission from husbands or family members before using mobile internet services, indicating that access alone does not ensure meaningful digital empower-

ment. This demonstrates that empowerment outcomes are mediated by household power relations and socio-cultural norms.

4.4. Comparative Insights: Rural vs. Semi-Urban Context

The comparative analysis reveals that:

- Semi-urban women benefit from better infrastructure and exposure
- Rural women face layered disadvantages (economic + cultural + infrastructural)
- Gender norms persist across both settings, though intensity varies

This suggests that location and gender intersect to shape digital inequality, supporting earlier research in South Asia^[14,15,29,30].

Figure 3 illustrates the mechanisms through which socio-economic and cultural factors influence access and empowerment outcomes.

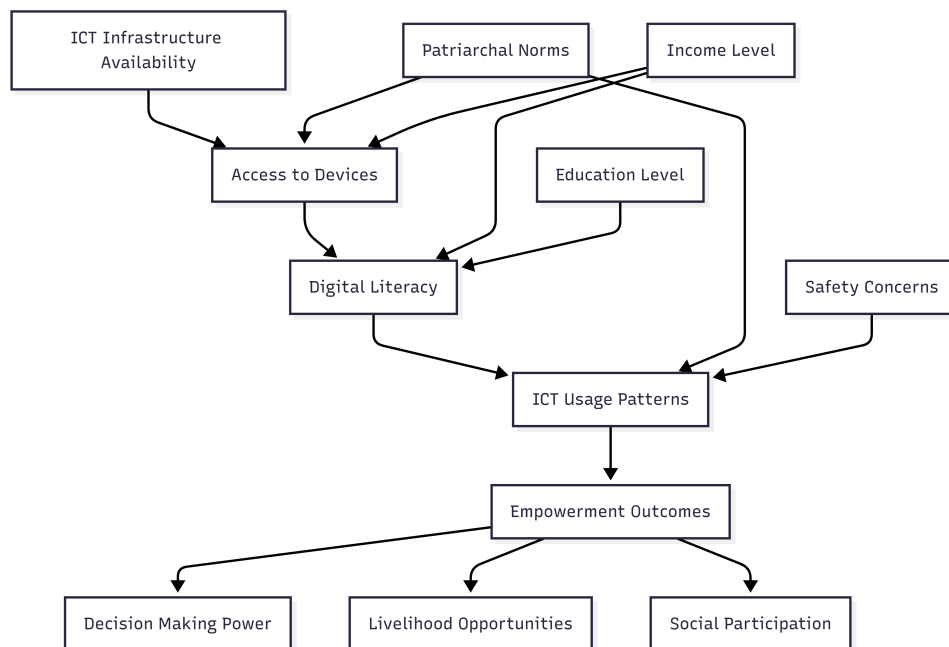


Figure 3. Digital Gender Divide Mechanism.

4.5. Link with Theoretical Framework

The findings validate the integrated theoretical framework used in the study:

- **GAD Approach** → highlights structural inequalities
- **Capability Approach** → explains how ICT expands choices
- **TAM & Diffusion Theory** → explains adoption differences

The study shows that technology adoption is not purely technical, but deeply social and gendered.

4.6. Broader Implications

The evidence gathered from both survey responses and qualitative narratives suggests that the digital gender divide cannot be addressed solely through infrastructural expansion. Behavioral and socio-cultural barriers continue to shape women's digital participation even when technology is physically available. Therefore, public policies should incorporate behavioral insights alongside traditional development interventions. Existing government initiatives in Bangladesh, including the Aspire to Innovate (a2i) programme and Union Digital Centers, may play a stronger role in promoting women's digital inclusion through targeted training and awareness campaigns. Community-based digital literacy programs designed specifically for women may improve technological confidence and independent ICT engagement, particularly in rural areas.

Behaviorally informed interventions are equally important. Family-centered awareness programs involving husbands, parents, teachers, local leaders, and community representatives may help reduce social resistance toward women's smartphone and internet use. NGO-led ICT training initiatives can further strengthen women's confidence, skills, and digital participation. In addition, "nudge"-based policy approaches—such as women-only training spaces, automatic enrollment in local ICT workshops, and public recognition of successful female digital users may help normalize women's participation in digital environments.

However, implementation challenges remain significant due to infrastructural limitations, financial constraints, and conservative social norms. Therefore, collaboration among government agencies, NGOs, educational institutions,

local organizations, and community leaders is essential for ensuring inclusive digital development in Bangladesh.

4.7. Future Research Directions

Based on the findings, future studies may explore:

- Longitudinal impact of ICT on women's empowerment
- Role of NGOs in digital literacy programs
- Intersection of age, class, and digital access
- Impact of mobile-based entrepreneurship among rural women

In summary, the study reveals that while ICT has transformative potential, its benefits remain unevenly distributed due to structural inequalities. Bridging the digital gender divide requires a holistic approach combining infrastructure, education, and socio-cultural change.

4.8. Limitations of the Study

This study is exploratory in nature and has several limitations. First, the research relied on purposive sampling and focused on selected rural and semi-urban areas, limiting the generalizability of the findings to the broader population of Bangladesh. Second, resource and time constraints restricted the sample size and prevented the use of advanced statistical modeling techniques. Third, some respondents were hesitant to discuss family restrictions and online experiences openly due to social sensitivity surrounding women's ICT use. Because the research relied on purposive sampling and selected geographical locations, the findings should be interpreted as exploratory rather than nationally representative. Future large-scale studies using broader sampling techniques may provide more generalizable evidence regarding women's digital inclusion across Bangladesh. Despite these limitations, the study provides important insights into the behavioral and structural dimensions of the digital gender divide in Bangladesh and offers a foundation for future research.

5. Conclusions

This study set out to examine the nature and extent of the digital gender divide and women's access to Information and Communication Technologies (ICT) in rural and semi-urban areas of Bangladesh. The findings clearly indi-

cate that despite notable progress in national ICT expansion under initiatives such as “Digital Bangladesh,” significant gender-based disparities persist, particularly among rural women. The research concludes that geographical location plays a critical role in shaping ICT access and usage. Women living in semi-urban areas benefit from relatively better infrastructure, educational exposure, and digital opportunities, whereas rural women remain disadvantaged due to limited connectivity, lower income levels, and restricted access to digital devices. However, the study also finds that improved access does not automatically translate into empowerment, as socio-cultural constraints continue to limit women’s control over ICT use in both contexts^[11,13]. A major conclusion of this study is that the digital gender divide in Bangladesh is not merely a technological issue but a multidimensional problem rooted in structural inequalities. Patriarchal norms, gendered restrictions on mobility, and concerns regarding safety and social reputation significantly influence women’s engagement with digital technologies. These findings are consistent with previous research, which emphasizes that women’s digital exclusion is closely linked to broader systems of gender inequality and power relations^[10,15].

Furthermore, the study highlights that ICT access has the potential to enhance women’s empowerment by improving access to information, education, and livelihood opportunities. Women who can use ICT more independently demonstrate higher levels of participation in household decision-making and social engagement. This supports the argument of the Capability Approach that access to resources such as ICT can expand individual agency and choices^[31]. However, the benefits remain uneven due to disparities in digital literacy, affordability, and institutional support. In addition, the findings underscore that digital inclusion policies must go beyond infrastructural development. While expanding internet connectivity and device availability is important, these efforts must be complemented by gender-sensitive interventions such as digital literacy training, community awareness programs, and initiatives that challenge restrictive gender norms. Without addressing these underlying social barriers, the goal of inclusive digital development cannot be fully achieved^[3,6,10]. Although the study provides important insights into women’s ICT access and digital inequality in Bangladesh, the findings remain exploratory in nature and should not be generalized to all regions of the country due to

purposive sampling and limited geographical coverage. Nevertheless, the study offers an important foundation for future research on gender, digital inclusion, and women’s empowerment in developing societies. Overall, this study contributes to the field of Gender and Development by demonstrating that ICT access is a crucial dimension of women’s empowerment in contemporary Bangladesh. It emphasizes that bridging the digital gender divide is essential not only for technological advancement but also for achieving broader goals of gender equality, social inclusion, and sustainable development. From a behavioral economics and public policy perspective, the study demonstrates that women’s digital exclusion is shaped not only by infrastructural inequalities but also by behavioral constraints, social norms, and intra-household power relations. Therefore, policies aimed at reducing the digital gender divide should combine technological investment with behaviorally informed interventions that address family attitudes, perceived risks, and community norms surrounding women’s ICT participation. Bridging the digital gender divide requires a holistic approach integrating infrastructure, education, social awareness, and behavioral policy innovation to ensure inclusive and equitable digital development in Bangladesh.

Supplementary Materials

The supporting information can be downloaded at <https://ojs.bilpub.com/files/JBEP-1277-Supplementary-Materials.docx>.

Funding

This research received no external funding. The study was conducted as part of the academic requirements for the Bachelor of Social Science (BSS) degree at Begum Rokeya University, Rangpur.

Institutional Review Board Statement

The study adhered to standard ethical guidelines for social science research approved by the Department of Gender and Development Studies, Begum Rokeya University, Rangpur.

Informed Consent Statement

Informed consent was obtained from all participants involved in the study prior to data collection. Respondents were informed about the purpose of the research, and their participation was entirely voluntary.

Data Availability Statement

The data supporting the findings of this study are not publicly available due to privacy and ethical restrictions. However, summarized data and relevant materials may be made available by the author upon reasonable request.

Acknowledgments

The author expresses sincere gratitude to Taha Husain, Assistant Professor, Department of Gender and Development Studies, Begum Rokeya University, Rangpur, for his continuous guidance, academic mentorship, and valuable feedback throughout the research process. Special thanks are also extended to the respondents from Maheshpur Upazila and Rangpur Sadar who participated in the survey and shared their experiences. The author also acknowledges the support provided by the Department of Gender and Development Studies at Begum Rokeya University for providing the necessary academic environment to complete this article.

Conflicts of Interest

The author declares no conflict of interest. The research was conducted independently without any financial or institutional influence that could affect the interpretation of the findings.

AI Use Statement

OpenAI ChatGPT (GPT-5.5) was used only for minor grammatical and language refinement and to improve sentence clarity. The AI tool was not used for study design, data collection, data analysis, interpretation of results, or the development of scientific conclusions. All research design, fieldwork, data analysis, interpretation, and the final academic content were independently conducted, verified, and approved by the author.

References

- [1] Bangladesh Bureau of Statistics, 2023. Survey on ICT Use and Access by Individuals and Households. Bangladesh Bureau of Statistics: Dhaka, Bangladesh.
- [2] UNESCO, 2021. I'd Blush If I Could: Closing Gender Divides in Digital Skills through Education. UNESCO: Paris, France.
- [3] GSMA, 2022. The Mobile Gender Gap Report 2022. GSMA: London, UK.
- [4] World Bank, 2023. Bangladesh. World Bank: Washington, DC, USA. Available from: <https://www.worldbank.org/en/country/bangladesh>
- [5] UNDP Bangladesh, 2021. Aspire to Innovate (a2i) Programme: Digital Inclusion Report. United Nations Development Programme: Dhaka, Bangladesh.
- [6] Rogers, E.M., 2003. Diffusion of Innovations, 5th ed. Free Press: New York, NY, USA.
- [7] Sen, A., 1999. Development as Freedom. Oxford University Press: Oxford, UK.
- [8] Moser, C., 1993. Gender Planning and Development: Theory, Practice and Training. Routledge: London, UK.
- [9] International Telecommunication Union, 2022. Measuring Digital Development: Facts and Figures. International Telecommunication Union: Geneva, Switzerland.
- [10] Kabeer, N., 1999. Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*. 30(3), 435–464. DOI: <https://doi.org/10.1111/1467-7660.00125>
- [11] Bryman, A., 2012. Social Research Methods, 4th ed. Oxford University Press: Oxford, UK.
- [12] BRAC, 2022. Digital Literacy and Access to ICT: A Study on Rural Women in Bangladesh. BRAC: Dhaka, Bangladesh.
- [13] Khan, M.S., Rahman, M.H., 2019. Digital divide and social inequality in South Asia: A gender perspective. *Journal of South Asian Development*. 14(2), 115–138.
- [14] Naila, K., Huq, S., 2020. Gender, Technology and Development in Bangladesh. University Press Limited: Dhaka, Bangladesh.
- [15] Hafkin, N.J., Huyer, S., 2007. Women and learning in the information society: Why gender should matter. *International Journal of Education and Development Using Information and Communication Technology*. 3(4), 1–13.
- [16] Hilbert, M., 2011. Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. *Women's Studies International Forum*. 34(6), 479–489. DOI: <https://doi.org/10.1016/j.wsif.2011.07.001>
- [17] Van Dijk, J., 2020. The Digital Divide. Polity Press: Cambridge, UK.
- [18] OECD, 2021. Bridging Digital Gender Divides. OECD Publishing: Paris, France.

- [19] Helsper, E.J., 2017. A socio-digital ecology approach to understanding digital inequalities among young people. *Journal of Children and Media*. 11(2), 256–260.
- [20] GSMA, 2023. The Mobile Gender Gap Report 2023. GSMA: London, UK. Available from: <https://www.gsma.com/gender-gap-2023/>
- [21] BRAC Institute of Governance and Development, 2021. Mobile Device Access and Practices Survey (MDAP). BRAC Institute of Governance and Development: Dhaka, Bangladesh.
- [22] UN Women, 2022. Gender Equality and Digital Inclusion in South Asia. UN Women: New York, NY, USA.
- [23] World Economic Forum, 2023. Global Gender Gap Report 2023. World Economic Forum: Geneva, Switzerland.
- [24] Rahman, T., Jahan, F., 2021. Gendered access to digital technology in Bangladesh. *Asian Journal of Women's Studies*. 27(4), 455–472.
- [25] Vuong, Q.H., 2025. Wild Wise Weird. AISDL: Hanoi, Vietnam.
- [26] Nguyen, M.-H., Ho, M.-T., 2026. The absurdist approach to unveiling possible paradoxical thinking for innovative socio-psychological research. *MethodsX*. 16, 103910.
- [27] United Nations, 2023. The Sustainable Development Goals Report 2023. United Nations: New York, NY, USA.
- [28] Gelles-Watnick, R., 2023. Americans' Use of Mobile Technology and Home Broadband. Pew Research Center: Washington, DC, USA.
- [29] Ha, H., Chuah, C.P., 2023. Digital economy in Southeast Asia: challenges, opportunities and future development. *Southeast Asia: A Multidisciplinary Journal*. 23(1), 19–35.
- [30] World Intellectual Property Organization, 2004. WIPO Intellectual Property Handbook. WIPO Publishing: Geneva, Switzerland.
- [31] Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*. 13(3), 319–340.