UNIVERSITY OF DHAKA

# Dissemination of Union Digital Services and its Effect on Women in Haor Regions in Bangladesh

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Doctor of Philosophy in Public Administration

*by*

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*Under the Supervision of*

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## Dedication

To my dear wife, Mahfuza Fariha Nawer
and
dear parents, Mrs. Shamsunnahar and Md. Nurul Islam.

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## To Whom It May Concern

I am writing to formally confirm my consent for Mohammad Samiul Islam, Registration No. 142, Session: 2020-2021, to submit his PhD thesis entitled " Dissemination of Union Digital Services and its Effect on Women in Haor Regions in Bangladesh" for examination.

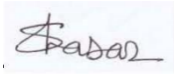
Mohammad Samiul Islam has been working under my supervision since 24 June 2021 and has successfully completed all required components of the PhD program.

The thesis addresses the effect of disseminated services of Union Digital Centre on women in the Haor region of Bangladesh. The research as presented in the thesis, represents a significant and original contribution to the specific domain of e-service delivery under the broader field of public administration.

I have reviewed the final draft of the thesis thoroughly and confirm that it meets the academic and formatting requirements set forth by the university and the department. I am confident that the work is of the required standard for a doctoral degree and is ready for formal examination. I also confirm that all ethical considerations have been addressed, and, where applicable, all necessary research permits and approvals have been obtained.

Thank you.

Kind regards,



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## Abstract

The research emphasises the dissemination of union digital services and its effect on women in the Haor region of Bangladesh. The study has concentrated on outlining dissemination strategies for union digital services, identifying the types of digital services requested by women, examining the impact of union digital services on women's education and employment, assessing the presence of gender disparities in access to UDC services, and pinpointing the primary challenges and socio-economic issues encountered by women in the delivery or receipt of UDC services. The research adhered to a pragmatism philosophy and employed a mixed-methods approach. The unit of analysis comprised service seekers in UDCs. A questionnaire survey was employed to gather quantitative data. The respondents for the survey were individuals seeking services from UDC. The sample consisted of 720 individuals, selected from 40 respondents from each UDC, across 18 UDCs, within 16 haor-based Upazilas from four districts in the haor region.

Descriptive statistical tools, such as frequency distribution and crosstabulation, are employed to analyse the socio-economic factors of the respondents and compare the responses of male and female participants. Additionally, inferential statistics like chi-square tests and binary logistic regression are used to examine how union digital services (the independent variable) relate to their spread and how they affect women (the dependent variable). Binary logistic regression is employed to predict the probability of the predictors concerning UDS effects on women. A questionnaire that includes structured, semi-structured, and unstructured questions was employed to gather quantitative data. In-depth Interview (IDI) and Focus Group Discussion (FGD) were employed to gather qualitative data and information from the areas under study. The process for analysing qualitative data involved transcription, familiarisation with the data, categorisation and coding, and the preparation of a codebook or framework. The analysis of qualitative data was conducted thematically.

The study's major findings indicate the socio-economic characteristics of the respondents as follows: The data indicates that the majority of respondents possessed primary education, accounting for 29% of the sample, with a gender distribution of 32.8% female and 23.9% male. Based on the chi-square result, the study indicates a strong relationship between the education status and gender identity of the respondents ($\chi^2 = 40.296$, df = 5, p = <0.001). Income levels varied between 10,000 and 20,000 BDT, representing 73.3% of respondents,

with 79.0% being female and 65.6% male. Based on the chi-square result, the study indicates a strong relationship between the income levels and gender identity of the respondents ($\chi^2$ = 28.872, df = 4, p = <0.001). The predominant occupation reported was household work, comprising 35.6% of the respondents, with a significant gender distribution of 61.4% female and only 0.3% male. According to the chi-square result, the study suggested a statistically strong relationship between the occupation status and gender identity of the respondents ($\chi^2$ = 352.371, df = 8, p < 0.001). Additionally, the largest age group among respondents was 31–50 years, making up 51.3% of the total, with 51.8% female and 50.5% male representation.

The study's conclusion pertains to users' perceptions of the effect of union digital services on women's education and employment in haor regions. Respondents reported the following utilisation rates for government services: birth/death/citizen certificate (83.9%), overseas employment (100%), passport TIN (tax) certificate (94.1%), livelihood information (92.3%), land services (88.7%), VGD or VGF card list (79.5%), trade licence (78.4%), land recording (82%), and various government allowances (75.3%). Information services similarly exhibit education/admission exams and examination results (84.3%), government form downloads (83%), health services (85.9%), agricultural information (90.4%), legal and human rights resources (100%), tourism data (100%), and environmental and disaster management information (90.8%). Furthermore, commercial services encompass typing or data entry (80.8%), printing and photocopying (81.5%), email and internet browsing (78.4%), CV and job applications (80.4%), computer/ICT/English language proficiency training (97.6%), phone or video conferencing (97.7%), mobile banking or banking services (96.4%), scanning and laminating (87.3%), photography (85.8%), online visa applications (98.4%), e-tickets for air/bus/rail travel (69.6%), insurance services (66.3%), science and technology (94%), and industry and commerce (92.1%), respectively.

Binary logistic regression identifies the variables as various government allowances, printing and photocopying services, and electronic tickets for air, rail, and bus transportation. Various government allowances are determinants influencing women's education and employment, as evidenced by a p-value of <0.001 (<0.05). The odds ratio of 3.555 signifies that those who obtained government allowances possess a probability of success in women's education and employment status that is 3.555 times higher than those who did not get such allowances. Another predictor is the act of printing and photocopying. It significantly impacts women's

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education and employment in rural areas, as indicated by a p-value of 0.011, which is below the 0.05 threshold. The odds ratio of 2.103 indicates that the likelihood of women's education status is 2.103 times higher for individuals who received it compared to those who have not. Another identified predictor is the utilisation of e-tickets for air, rail, and bus transport, which impacts women's education and employment in haor regions, as indicated by a p-value of less than 0.001 (<0.05). An odds ratio of 5.235 signifies that persons who obtained e-tickets for air, rail, and bus travel are 5.235 times more likely to experience an impact on women's education and employment in the haor region than those who did not receive e-tickets.

The qualitative data reveals an approximate 15 to 20 per cent rise in the female education rate in haor regions during the last decade. UDC advocates for guardians and female students to pursue their education by enhancing access to educational services within their communities. Moreover. Women and girls are inspired to pursue their education to become women entrepreneurs at the UDC. UDC requires specific educational qualifications for its female entrepreneurs. Moreover, women's education is advancing through UDC. In this instance, UDC is fostering awareness among the local populace regarding the education of women and girls. Mobile banking enables scholarships and stipends for female students in the haor region. Consequently, UDC promotes women's education in haor areas.

Qualitative research reveals that women constitute 30% of the UDC workforce in haor regions. Female entrepreneurs and their assistants represent success. Furthermore, UDC provides several training programmes, including computer skills, ICT, English language competence, and sewing machine operation. UDC is delivering financial services using an agent banking system. Consequently, women in haor regions obtained microcredit from the UDC. Furthermore, UDC assists prospective women and girls in securing employment in outsourcing, freelancing, and internet business or e-commerce. Additionally, the UDC supports and enables opportunities to find overseas employment in haor regions.

The study revealed various methods for disseminating UDC services, with paper-based communication being used by 73.7% of females and 66.2% of males. Verbal communication accounted for 20.2% of females and 20.3% of males. Cell phone usage was reported at 3.6% for females and 8.2% for males, while email was used by 2.4% of females and 5.2% of males. The research additionally investigated an alternative method for the dissemination of UDC services, specifically focusing on home service delivery. The users' satisfaction level

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regarding UDC performance is notably high. This is particularly evident in the metrics for internet speed, where 42.2% of females and 31.8% of males expressed moderate satisfaction. Additionally, the availability of essential equipment at UDC garnered a satisfaction rate of 44.8% for females and 39.7% for males. Furthermore, the competence of entrepreneurs at UDC received a positive response, with 52.0% of females and 43.6% of males indicating satisfaction. The remaining two categories—power availability in UDC (29.9% for females and 26.6% for males) and entrepreneurial behaviour in UDC (39.8% for females and 34.1% for males)—demonstrate higher levels of satisfaction. Respondents who utilised UDC services reported a moderate level of satisfaction regarding the overall service delivery. Specifically, 62.7% of female respondents and 53.8% of male respondents indicated that they were satisfied with the services provided.

The study investigates the effect of union digital services on various facets of women's lives in the Haor region. The study determined some specified areas. Among the specified areas, easy access to government, information, and commercial services is included. The study indicates moderate agreement, constituting female (44.3%) and male (41.3%) respondents. Similarly, in respect of enhancing access to information and services for women, the study suggested moderate agreement (female 43.9%; male 37.4%). Thereby, in the case of increasing health information and telemedicine, the study demonstrated a moderate agreement constituting female (38.8%) and male (35.4%) respondents. Additionally, the study indicates a high level of agreement regarding the spread of computer literacy provided by UDC, with female respondents at 40.0% and male respondents at 36.4%. In respect of the promotion of education and literacy, the data indicates a moderate agreement among female respondents at 41.7% and male respondents at 33.1%. Furthermore, there is a significant contribution to the enhancement of employment opportunities for women, as evidenced by the responses, which indicate a 40.0% female and a 36.4% male high level of agreement on that issue. Finally, the report encourages increased participation of women in household and local government decision-making processes, which has resulted in moderate agreement by female respondents (52.0%) and male respondents (44.9%).

The report identifies the specific types of digital services that women in the Haor region are requesting from UDCs. The data shows the different services available, which include: education (52.2%), downloading government forms (51%), getting birth, death, and citizen

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certificates (58.3%), health information and telemedicine (60.1%), livelihood information (48.9%), lists of VGD and VGF cards (64.6%), data entry and typing (58.4%), printing and photocopying (56.3%), email and internet access (52.8%), scanning and laminating (55.6%), photography (54.4%), and various government allowances (51.4%). Women in the Haor region were actively pursuing various services, including OMS cards, electricity bill payments, COVID-19 immunisations for children, applications for NID cards, assistance and refuge during floods, microcredit options, and insurance services.

The research indicates that UDS significantly affects key aspects of the lives of women living in the Haor region. The primary areas of focus encompass education for women and girls, healthcare access for women and girls, employment opportunities for women, and the participation of women in decision-making processes at both household and local government levels institutions. To enhance women's education in the Haor area, it is advisable to promote the utilisation of online educational programmes. The UDCs possess the capability to address technical challenges and improve literacy rates and educational awareness. By prioritising the training and benefits offered to women, UDCs can effectively tackle poverty, create job opportunities, improve social awareness, and provide educational resources and scholarships for female students.

Furthermore, they may enhance understanding of the importance of women's education via campaigns and social awareness initiatives. UDCs deliver various types of information, encompassing education-related content and financial assistance, through women's gatherings or yard meetings. Furthermore, they offer a variety of training programmes and actively advocate for women's education regarding the advantages of digital technology. The implementation of essential measures by UDCs can enhance the quality of education for women in the Haor area. The implementation of UDC services has significantly impacted women in Haor regions, granting them access to services that are primarily aligned with their interests. The increase in ICT has enabled women to independently access these services, removing the necessity for external support or long-distance travel. Women demonstrate a higher propensity to utilise these services, as they enable the independent execution of essential tasks and the effective use of digital services, thereby promoting self-reliance. The execution of UDC initiatives has led to increased participation in governmental affairs and improved confidence among women in the region. A thorough analysis of the impact of UDC

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services on women has yet to be performed. The acquisition of these items through official services or information is a straightforward procedure, although it may differ in terms of cost and the time needed for completion. Women now possess the ability to independently access government services, eliminating the need for reliance on men. Attendance at UDC is required, where participants will engage in discussions with company owners to address their concerns. The survey findings indicate that a significant majority of respondents (91.94%, with 93% of females and 90.50% of males) do not acknowledge the existence of gender-based inequality. Conversely, a minority of respondents (8.06%, comprising 7% of females and 9.50% of males) recognise its presence. Evidence is presented to support the existence of gender inequality. At the UDC, there is a pronounced emphasis on nepotism, favouritism, education, political influence, and the interests of privileged groups. The analysis ultimately identified many significant obstacles to gender equality.

The challenges encountered are attributed to several factors, including inadequate communication infrastructure, the frequent occurrence of natural disasters, low income levels, the proximity of UDC to the local market, the absence of social security measures, the prevalence of sexual harassment, the lack of separate sanitation facilities for women, insufficient cooperation from the UP chairman and secretary, the prevalence of early marriages, health issues, insufficient capital, inadequate training, flawed performance evaluation methods, workplace restrictions, a lack of family support, the absence of job security, limited job opportunities, and the misinterpretation of religious rules. Additionally, there are several issues related to UDCs. The challenges encountered in UDC management encompass the lack of clear guidelines and policies, difficulties in the selection of qualified UDC entrepreneurs, a shortage of skilled female entrepreneurs, inadequate space for UDC operations, insufficient knowledge among local UP chairmen regarding ICT usage, slow internet connectivity, power outages, political interference, limited awareness, underutilisation of digital equipment, and challenges faced by Upazila and DC offices in monitoring and supervising UDC activities.

Key words: Dissemination, Union Digital Services, Women, Gender Disparity, and Haor Region

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# Declaration

The thesis is an original contribution resulting from my study and does not include any content that has been previously approved for the attainment of any other academic degree at any university or similar institution. This thesis is free from any previously published or written content by another individual, save for instances where proper references are provided within the text.



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Mr. Mohammad Samiul Islam

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**List of Acronyms**

| | |
|---|---|
| A2I | Access to Innovation |
| A2I | Aspire to Innovation |
| ADB | Asian Development Bank |
| ADC | Additional Deputy Commissioner |
| AL | Awami League |
| ASA | Association for Social Advancement |
| ATT | Attitude Towards Use |
| AU | Actual System to Use |
| BAL | Bangladesh Awami League |
| BANBEIS | Bangladesh Bureau of Educational Information and Statistics |
| BAPARD | Bangabandhu Academy for Poverty Alleviation and Rural Development |
| BARD | Bangladesh Academy for Rural Development |
| BBS | Bangladesh Bureau of Statistics |
| BCC | Bangladesh Computer Council |
| BDT | Bangladeshi Taka |
| BIDS | Bangladesh Institute of Development Studies |
| BNP | Bangladesh Nationalist Party |
| BRAC | Bangladesh Rural Advancement Committee |
| BRDB | Bangladesh Rural Development Board |
| BTRA | Bangladesh Telecommunication Regulatory Act |
| BTRC | Bangladesh Telecommunication Regulatory Commission |

| | |
|---|---|
| CBO | Community-based Organization |
| CeC | Community e-Centres |
| CEDAW | Convention on the Elimination of All Forms of Discrimination Against Women |
| CRI | Centre for Research and Information |
| CSO | Civil Society Organization |
| CV | Curriculum Vite |
| D.Net | Development Research Network |
| DB | Digital Bangladesh |
| DC | Deputy Commissioner |
| DDLG | Deputy Director of Local Government |
| DOC | Department of Cooperatives |
| DPE | Directorate of Primary Education |
| DV | Dependent Variable |
| FGD | Focus Group Discussion |
| FIVDB | Friends in Village Development Bangladesh |
| G2B | Government to Business |
| G2C | Government to Citizen |
| G2G | Government to Government |
| GDP | Gross Domestic Product |
| GED | General Economic Division |
| GG | Good Governance |

| | |
|---|---|
| GOB | Government of Bangladesh |
| GSMA | Global System for Mobile Communication |
| HH | Household |
| HRBA | Human Rights-Based Approach |
| HSC | Higher Secondary School Certificate |
| IBRD | International Bank for Reconstruction and Development |
| ICT | Information and Communication Technology |
| IDI | In-depth Interview |
| IG | Inclusive Governance |
| IMR | Infant Mortality Rate |
| IS | Information System |
| IT | Information Technology |
| IV | Independent Variable |
| JSC | Junior School Certificate |
| LFS | Laboure Force Survey |
| LGD | Local Government Division |
| LGI | Local Government Institution |
| LGSP | Local Government Support Programme |
| MACH | Management of Aquatic Ecosystem Through Community Husbandry |
| MCT | Multipurpose Community Telecentres |
| MDGs | Millennium Development Goals |
| MEFWD | Medical Education and Family Welfare Division |

| | |
|---|---|
| MMR | Maternal Mortality Rate |
| MOPC | Ministry of Planning Commission |
| MOPTIT | Ministry of Posts, Telecommunications, and Information Technology |
| MOWCA | Ministry of Women and Children Affairs |
| MOWR | Ministry of Water and Resources |
| MPO | Monthly Payment Order |
| MRP | Machine Readable Passport |
| NGOs | Non-Government Organizations |
| NID | National Identity Card |
| NILG | National Institute of Local Government |
| NIP | National ICT Policy |
| NPM | New Public Management |
| NWDP | National Women Development Policy |
| OECD | Organization for Economic and Cooperation for Development |
| OMS | Open Market Sale |
| OPP | Outline Perspective Plan |
| OR | Odds Ratio |
| PDBF | Palli Daridro Bimochon Foundation |
| PEU | Perceived Ease of Use |
| POPI | People's Oriented Program Implementation |
| PP | Perspective Plan |
| PPP | Public Private Partnership |

| | |
|---|---|
| PPPP | People's Public Private Partnership |
| PRSP | Poverty Reduction Strategy Papers |
| PU | Perceived Usefulness |
| RIC | Rural ICT Centre |
| RMG | Readymade Garments |
| RP | Research Philosophy |
| RTC | Rural Technology Centre |
| RTI | Right to Information |
| SDGs | Sustainable Development Goals |
| SET | Self-Efficacy Theory |
| SPS | Service Process Simplification |
| SPSS | Statistical Package for Social Science |
| SSC | Secondary School Certificate |
| STEM | Science, Technology, Engineering and Math |
| TAM | Technology Acceptance Model |
| TCV | Time, Cost and Visit |
| TIB | Transparency International Bangladesh |
| TIN | Tax Index Number |
| TPB | Theory of Planned Behaviour |
| TRA | Theory of Reasoned Action |
| U5MR | Under 5 Mortality Rate |
| UDC | Union Digital Centre |

| | |
|---|---|
| UDS | Union Digital Services |
| UGC | University Grants Commission |
| UISC | Union Information and Service Centre |
| UNDP | United Nations Development Programme |
| UNO | Upazila Nirbahi Office |
| UP | Union Parishad |
| USAID | United States Agency for International Development |
| USD | United States Dollar |
| UTAUT | Unified Theory of Acceptance and Use of Technology |
| VDO | Village Development Organizations |
| VGD | Vulnerable Group Development |
| VGF | Vulnerable Group Feeding |
| WAO | Women Affairs Officer |
| WB | World Bank |
| WEF | World Economic Forum |
| WSIS | World Summit on the Information Society. |
| WVI | World Vision International |

# CHAPTER ONE

# INTRODUCTION DISCUSSION

## 1.0 Introduction

E-government primarily involves the provision of services by the government through the internet and digital technologies. These entities may include ordinary citizens, businesses, or other governmental offices (Palvia and Sharma, 2007). With reference to Chen (2006), it states that the advantages of e-government include easier access to information and services for citizens. Technology facilitates the development of positive relationships among individuals. E-Government refers to the use of information and communication technology (ICT) to enhance the efficiency, responsiveness, transparency, and accountability of governmental operations (Sobhan, F. et al., 2004). E-government refers to the application of information and communication technology (ICT) by governmental entities to deliver information and public services to citizens (Teicher et al., 2002). According to Hoque and Sarwar (2015), the World Bank defines e-government as the use of information technologies, including WANs, the internet, and mobile computing, by government agencies to enhance interactions with citizens, businesses, and other governmental entities. E-government offers a range of services, such as the improved delivery of governmental functions to the populace, the empowerment of individuals through access to information, enhanced engagement with commercial entities, and more effective management within government structures (Dada, 2006).

The term e-government is ambiguous due to its similarity to the term e-governance (Hasan, 2025). In this array of interpretations, electronic governance involves online government information and services, automating licensing and registration, notifying about tenders and procurement, allowing online complaints submission, and creating platforms for public feedback on new laws. This technology enhances interactions among government, business, and citizens. E-government is not just document composition on computers; it replaces manual government procedures, leading to more openness, efficiency, and less expense in serving citizens and companies (Sobhan, F., et al., 2004). In other words, e-governance is a new approach to managing government operations using ICT tools at various levels (Saxena, 2005). It integrates e-democracy, e-government, and e-business, aiming to improve governance and service delivery (Okot-Uma, 2000). The public sector uses advanced

technologies like the internet to enhance service delivery, provide reliable information, and increase citizens' knowledge (Ronaghan, 2002). This approach aims to facilitate access to the governing process and promote greater citizen engagement. Decision-makers are committed to enhancing the partnership between private citizens and the public sector, addressing the issues of the information age and improving governance. However, e-government has undergone numerous interpretations and definitions since its inception, as it lacks a universally accepted definition (Halchin, 2004; Brown, 2005).

Over the past twenty years, governments have sought to enhance Bangladesh's public administration through a range of initiatives aimed at improving public service delivery. The implementation of e-Governance in 2003 sought to digitise the operations of multiple ministries, establish websites with essential information, and create a digital library (Taifur and Chowdhury, 2003). The One-Stop Utility Bill Payment System was implemented in 2003 to enhance public service delivery and improve the quality of life for citizens by promoting transparency, enhancing governance, and decreasing the time, complexity, and expenses associated with accessing government services. The government of Bangladesh has been pursuing the implementation of e-governance under the initiative 'Digital Bangladesh' (DB) since 2009, aiming to enhance human resource development, facilitate citizen connectivity, and promote digital governance alongside the private sector (Hasan, 2012). This has resulted in two outcomes: enhanced internal competency and improved efficiency in public service delivery (Hasan 2014).

All public agencies in Bangladesh have established websites at the union, upazila, district, and division levels to facilitate access and delivery of services. The National Web Portal (NWP) facilitates citizen rights via 25,000 websites, enhancing transparency and accountability in public information and services. The Seba Kunjo (Services Portal) offers comprehensive information regarding the service availing process, whereas the Forms Portal consolidates 1029 forms into ten categories for citizen engagement with the government. The National E-service System (NESS) Framework is founded on these initiatives, integrating all government e-services to enhance citizen engagement in service delivery and interactions via social networking (A2I, 2014).

The government-initiated Access to Information (a2i) in 2007 within the framework of the Digital Bangladesh agenda, emphasising citizen-centric public service innovation to enhance public service delivery and improve the quality of life for citizens (Nasrullah, 2025). A2i

improves governance, enhances access to efficient services, and strengthens the capacity of officials and service providers. Significant A2i initiatives encompass District e-Services Centres (DESC), Jatiyo e-Tathyakosh (National Information Cell), E-Purjee (Digital Sugarcane Procurement System), National Web Portal, Anti-Corruption Telephone Hotline, Mukhtopoth, National Emergency Services, Land Information Services, and Union Digital Centre (Baroi and Pandey, 2025).

### 1.1 Background of the study

This research examines the union digital services provided by Union Digital Centre and their effects on women's education and livelihood improvement in the haor region of Bangladesh. The UDC, a successful e-governance initiative in Bangladesh, was one of the three areas of focus in this discussion. It subsequently highlighted the conditions of women in Bangladesh, particularly in the Haor region. It subsequently discusses the challenges related to haor areas.

In modern epochs, a new genus of public sector transformations, often referred to as e-governance, has emerged, utilising ICT to provide information and amenities to people more competently and successfully, leveraging the benefits of reduced time, space, and fees (Farooqi, 2015). The idea of ‘e-Governance’ is an innovative facet of the governance approach (Islam & Sharmin, 2016). It denotes the practice of information and communication technologies by administrative agencies that can improve their liaison with people, businesses, communities, different ranges of management, and other governments. These technologies aid in the delivery of government services to citizens, the expansion of collaborations with trade and industry, and the provision of information (Moon, 2002). The key components of digital governance are electronic administration, automated service delivery, and participation through electronic devices (A2I, 2021). The goal of e-governance is to allow the public to start a petition for a specific government amenity without having to go to a public office or have a direct exchange with the government. The service is delivered through government websites (Rahman, 2016). Backus (2001) also said that e-governance has two main goals: first, it gives people clear access to information and knowledge about the political process, facilities, and options that are open to them; second, it enables the change from passive information access to active citizen participation by informing, demonstrating, inspiring, consulting, and involving the citizen.

Bangladesh also joined the world of e-governance by introducing the concept of ‘Digital Bangladesh’ in 2009. The essence of Digital Bangladesh (DB) is human resource progress relating to citizens, digital government (public service delivery through an electronic network that is called e-governance), and ICT in trade. One of the basic aims of DB is to ensure technology-based delivery of amenities to the doorsteps of local people, especially marginalised groups of society (Hasan, 2020). The UDC is one of the contributions of DB, which addresses the marginalised community through UDC as they are living in the villages. UDCs are considered an e-governance initiative under the focus of DB at the grass-roots level.

A UDC is a service delivery centre where rural residents can access government-provided information and opportunities. It is also known as a local information centre, and some call it a local knowledge center. Initially, it served rural people as the Union Information and Service Centre popularly known as UISC. It is a small enterprise hosted by local government institutions in rural areas and started in two locations in 2007. Formally, UISC was launched at 4545 UPs in 2010. In 2014, the UISC was renamed the union digital centre to align with the concept of ‘Digital Bangladesh’. The Access to Information (A2I) Programme of the Chief Executive's Office of the People's Republic of Bangladesh government took steps to connect these UDCs to contemporary technology on a local level and build public and commercial service delivery sites in each UP. There are currently 4,571 UDCs (A2I, 2021) in all districts across the country, and all these digital centres have now been repurposed as information hubs for rural communities, from which rural people are given stress-free access to various public information and services.

The UDC serves as the largest ICT-enabled one-stop service outlet in Bangladesh. Established in 2007, it served as a pilot project under the UNDP-supported Access to Information (a2i) Programme of the Prime Minister’s Office. In 2008, the Local Government Division (LGD) initiated 30 Community Electronic Centres (CeCs) in Union Parishads. All UISCs were inaugurated simultaneously on November 11, 2010, to realise the vision of 'Digital Bangladesh' (Hoque and Mahiuddin, 2013; Shamrat and Hossain, 2018).

According to Bangladesh’s Vision 2021 for ICT-driven modernisation, the government’s Digital Bangladesh initiative aims to enhance technological accessibility in both urban and rural areas. The UDCs established in 2009 play a crucial role in this initiative, comprising 4552 UDCs in UPs, 321 in Paurashavas, and 407 in city corporations. UDCs operate under a

public-private partnership and e-governance framework, engaging local entrepreneurs to deliver essential services and information. Their collaboration involves banks, insurance companies, NGOs, and government entities that employ diverse technological tools. They obtain financial and technical support from local governments, land registration revenue (1%), and central government agencies such as the Information Technology Development Wing, Bangladesh Computer Council (BCC), Local Government Division, NGOs, telecom companies, and private banks, which provide training in computer skills, entrepreneurship, and banking (Baroi and Pandey, 2025).

The UDC represents a distinctive initiative by the government of Bangladesh aimed at delivering electronic services directly to rural populations. This hub provides access to various government services and information for rural populations, minimising both time and costs. The service centre, established in 2009, operates under the local government division as well as Access to Information (A2I) of the Prime Minister's Office (PMO) and is ICT-based. The financing is provided by the UNDP and the government of Bangladesh (Saleheen, 2020). The UDC provides essential information and amenities to individuals residing in marginalised areas. The average distance from a rural residence to UDC is approximately 4 kilometres, whereas the nearest government office at the Upazila (sub-district) level is situated around twenty kilometres away. Two citizen entrepreneurs, one man and one woman, who collaborate with local government representatives, operate UDCs, which function as micro-businesses (Khatun, 2022). UDCs consist of a team comprising two entrepreneurs, ensuring the inclusion of at least one female member. An executive committee, chaired by the Union Parishad Chairman, supervises UDCs for a duration of two years, with one-third of its members comprising women. The UP secretary offers essential assistance. The committee identifies local entrepreneurs, procures equipment, establishes service charges, oversees finances, and promotes UDC services. The district commissioner's and UNO's offices conduct monitoring, whereas UDCs manage a management information system. Monthly meetings at the UNO's office evaluate the performance of UDCs (Baroi and Pandey, 2025).

The UDCs are the hallmark achievements of Vision 2021. It embodies service access innovation, and it facilitates rural societies to access government and profit-making services because of innovations in ICT and mobile technology in service delivery (Bakshi and Rahman, 2016). Basically, UDC offers three categories of services: government, livelihood

or information, and commercial services, respectively. The government amenities include online birth registration, official forms, gazettes, announcements, university enrollment, public exam results, survey responses, and citizen documentation. Agriculture, health, education, travel, environmental and adversity management, research and innovation, manufacturing, and the market are all covered in livelihood or information services. Commercial services include m-banking, life insurance, computer skills, internet usage, email, available printing, scanning, writing, photocopying, bindery, data entry, visual art, telephone conversations, flexi loading, smartphone ringtone download, audio-visual demonstrations, video conferencing, projector rental, and passport and visa services (TIB, 2017; NILG, 2009).

The next discussion area is women in Bangladesh, specifically in the Haor areas. It indicates that Bangladesh's social structure imposes strict behaviour codes for women, with Islam playing a limited role in these extreme manifestations. Common features include gender segregation, distinct family and kinship structures, and a robust ideology that associates family honour with feminine virtue. Men are assigned the responsibility of protecting family honour by exercising control over female members (Kabeer, 1988). The legal framework and societal norms significantly contribute to the persistent issues of discrimination, exploitation, and violence against women in Bangladesh. Women's groups and non-governmental organisations are essential for achieving qualitative change and establishing women's rights (Zaman, 1999). Violence against women in Bangladesh is widespread, encompassing domestic violence, acid attacks, rape, trafficking, and forced prostitution. Factors contributing to abuse include questioning of husbands, neglect of household responsibilities, economic difficulties, theft, and refusal to provide a dowry (Wahed and Bhuiya, 2007). Pandey (2008) analyses the role of women's organisations, donors, and NGOs in shaping women's participation in the political process in Bangladesh, particularly regarding the government's execution of quotas (Pandey, 2008). Despite increased representation, women still encounter social, cultural, and religious obstacles; they frequently experience victimisation, assault, and harassment when asserting their rights (Pandey, 2008). The current situation is characterised by complexity, encompassing challenges related to social inequality, economic decision-making, household decision-making, education, occupations, family planning discussions, the age of marriage, freedom of movement, political representation, and legal rights (Paul et al., 2016). Education is crucial for empowering women, as it enhances their autonomy and amplifies their voices in familial and community matters (Ibid., 2016). Bangladesh ranks 50th

out of 153 countries in the 2020 Global Gender Gap Report, but there are still challenges in advancing women's economic empowerment. Bangladesh has achieved notable advances in women's empowerment through enhancements in education and healthcare, as well as a rise in labour force participation (Paul et al., 2016). However, concerns remain about economic participation and opportunity, largely stemming from the limited involvement of women in the labour force, wage gaps, and insufficient representation in senior civil services and managerial positions (GED, 2020a). As an emerging country[1], Bangladesh is still struggling to improve the living conditions of women, particularly those in rural areas (Islam & Slack, 2016). In developing countries like Bangladesh, women play a vital role in household and societal advancement. Females, more than males, have to balance the difficulties of surviving in extreme poverty. However, these women are excluded from discussion because they are frequently illiterate, financially dependent, and lack confidence and mobility (Ahmed et al., 2006). Based on this context, the goal of this study is to highlight how UDC's digitized services affect women in underserved areas like Haor. As a result, women's contributions must be recognised to meet the current challenges of development programmes across the country as well as from a global perspective.

In this context, the statistical figure of women is approximately half of the population. Their societal position, especially in rural areas, remains very low. They have their place as the most underprivileged group in society, facing opposing circumstances in terms of social repression and economic disparity. A visible majority of them are exceptionally poor. Even rural women and girls are not encouraged to work outside of the household (Hasan, 2008). Economic dependency, societal culture, values, norms, and misinterpretation of religious rules and regulations are responsible for this situation. Besides, rural women are considered part of those underserved and unreached segments of society (Hasan, 2020).

The UDC is a channel by which government services are provided to backward locations like Haor. Haors is low, marshy terrain in northeastern Bangladesh, characterised by annual flooding during the monsoon season. These wetland areas, which include 373 haors in the districts of Kishoregonj, Netrokona , Sunamgonj, Sylhet, Habigonj, Maulavibazar, and

[1] Emerging countries are known for having the largest, healthiest, and fastest-growing economies in the world (Haque, 2011). Bangladesh has a remarkable track record of economic growth and development across a variety of areas. The population profile, readymade garment exports, remittances, and stable macroeconomic conditions made it possible (WB, 2022).

Brahmanbaria, cover about 1.99 million hectares and are home to around 19.37 million people. Haors are basin-shaped formations where water remains stagnant or experiences flash floods from June to November (Sarif et al., 2016). Despite its economic importance, the Haor region remains underdeveloped due to its physical and hydrological circumstances. Agriculture and fishing are the primary pillars of the region's substantial economic capital, producing over 5.25 million tonnes of paddy annually. However, over 28% of the Haor population lives in poverty (Ayers & Forsyth, 2009). Agriculture is the principal economic activity in the Haor region, with over 2.0 million hectares of land and 19.4 million inhabitants (Uddin et al., 2019). The Haor regions of northeastern Bangladesh are home to over 2.0 million inhabitants (Plan, 2012).

In other word, Haor is a low-land area, and it is found in greater Sylhet and Mymensingh. It consists of seven districts and 47 upazilas. The communication networks and infrastructure of the region are very poor, and their livelihood opportunities are also limited. The main occupations in this region are farming, fishing, agriculture, non-agriculture activities, and small and medium businesses. Agriculture is the main source of income for the people in the Haor areas. Agriculture is the source of income for 53.67 per cent of the population. Non-agricultural labour (6.13 %), service (5.65 %), and fishing (2.59 %) are some examples (MOWR, 2012a). The Haor regions cover 1.99 million hectares, or 13.5% of the country’s total surface area (Hossain, 2021). The Haor region in Bangladesh has consistently been behind in national development, despite the country's modest economic progress (Plan, 2012). The region has the lowest living standards and a large population density, with eleven upazillas lacking connectivity to the mainland due to an inadequate road communication network (Plan, 2012). The Haors provide livelihoods for millions of rural individuals, relying on them for fishing, rice cultivation, boating, hunting, and wage work in sand and stone quarries (Planning Commission, 2016). The education attainment in the Haor region is predominantly at the primary and secondary levels, with challenges in higher secondary education such as a lack of infrastructure, a shortage of educators, and inadequate training personnel. Insufficient oversight, along with reduced attendance during the rainy season and the periods dedicated to boro cultivation and harvesting, further exacerbates these educational issues. The communication system is also deficient, resulting in many students not attending educational institutions (Hoque, 2025). Additionally, the region is vulnerable to transient relocation due to restricted livelihood prospects, with 80% of families relying on wage employment during the monocrop season and fishing activities. Underprivileged male

relatives temporarily relocate to other cities to alleviate food insecurity, health issues, and unemployment during difficult times (Sharma, 2010).

### 1.2 Statement of the Problem

Bangladesh is a tiny country with vast, untapped potential. She has a vast population, with most of the people living in villages. To make them productive human resources, they require a robust communication system and increased understanding of e-services, which is a vital component for expansion and growth. The government recently created UDCs, which provide low-cost information in areas like healthcare, schooling, farming, legal, civil rights, ecology, business, and entrepreneurship, among others. If UDC's aim is achieved, e-services in rural regions as well as at the government level would be enhanced. In Bangladesh, both the UDC and its scope are fairly inexperienced. Most of the residents are uneducated. By building tight partnerships with national and regional levels to encourage exponential development towards a digital Bangladesh, such digital services in distant places have enhanced their standard of living. The AL-led government's electoral promise was to create a digital Bangladesh. In addition, the "Digital Bangladesh" initiative and its execution have been essential in achieving the goal of transforming Bangladesh into a middle-income country by 2021. This vision, together with a slew of innovative businesses, has steered the country towards a more prosperous and long-term future. Many academics believe that information and communication technology (ICT) plays a significant role in bringing public services to the doorsteps of the masses, as proven by the experiences of many developed and developing nations. Because of the widespread use of ICT, the quality-of-service delivery and access at the grassroots level have substantially improved, as predicted by Vision 2021. It also facilitates the review of UDC's success, particularly in determining the effect on women in the Haor areas.

Overall growth in the Haor region will not be possible without the advancement of underprivileged people like women in Haor areas. According to the Master Plan of Haor Area, on average, the Haor district population has a literacy rate of 38%. Kishoreganj and Sunamganj in Haor district have low literacy rates, which are 37 and 33 percent, respectively (MOWR, 2012b). According to a report from the Bangladesh Bureau of Statistics published in 2018, both sexes have an education rate of 67.3%, with males having a rate of 70.3% and females having a rate of 64.4% (BBS, 2018). Thus, women remain unseen and ignored. The anticipated study is intended to explore any changes among rural women in terms of

education and employment using UDC-provided services. The terms "education" and "employment" are both directly related to awareness and economic solvency. For women in the Haor area to succeed, they must be aware of their legal rights and have unimpeded access to and control over resources. This is also required for independent decision-making in their lives and livelihoods. Minimal development is the term for this type of growth. Administrative reform is needed for successful governance since the administration initiates and implements all development projects. The dissemination of Union digital services can help establish a better governance system. As a result, UDC is seen as an e-governance effort at the grassroots level.

To sum up, the main goal of the government is to serve its nation in the easiest way possible. A government refers to its service provision process as its governance system. Whether the government is people-oriented or not is a topic of debate. This issue is currently under debate. However, the OECD has emphasised the importance of ensuring inclusive governance for developing countries such as ours. Furthermore, our government made a commitment to the nation prior to the eighth parliament election, promising to establish a digital Bangladesh by 2021, if elected to power. After the 2008 parliament election, the government formed and implemented various reform initiatives aimed at building a digital Bangladesh. Meanwhile, the AL-led government served the country for three consecutive terms. However, the public continues to express dissatisfaction with the performance of government agencies. Moreover, inclusive governance, a globally recognised governing approach, ensures that everyone remains part of the government network. This government has inaugurated UDCs in rural areas to provide public services to marginalised individuals. Surprisingly, both UDC service delivery and its effect on women in rural areas remain a topic of discussion. So, the study aimed to investigate UDC's dissemination strategy and its effect on women in Bangladesh's haor regions, with the goal of addressing these questions.

Many studies have explored the involvement of UDCs, women, and haor regions in both public and private service delivery. Important subjects encompass the digital divide, e-service delivery, the current state and future prospects of UDC, the potential of PPP in enhancing ICT services, rural development via UDC, the contribution of UISC to healthcare improvement, the reduction of social inequalities, UDC efficiency, client satisfaction, entrepreneurship development, sustainability, e-services for rural populations, digital

transformation, and women's rights. The dissemination of digitised UDC services and their impact on women's progress in the Haor region constitutes a research gap.

### 1.3 Framing of Research Questions

One of the major aims of the UDC is to address underserved and marginalised communities in Bangladesh. The marginalised group includes women, the disabled, and unemployed young people. Women are a substantial part of the total population of the nation, but rural women remain underserved and unreached from the advantages of UDC-offered services. In rural Bangladesh, about 71% of the population lives in an agro-based society. Among them, approximately 50% are women (Hasan, 2020). Lack of access to ICTs is a significant factor in women's advanced devaluation of financial, societal, and political norms in their countries and around the world. ICT can be a powerful enabler of women's political and social empowerment, as well as an increase in their gender popularity (Islam et al., 2006). UDC can help women by raising their awareness, strengthening their social networks, and providing them with better opportunities for social and economic development (Islam and Slack, 2016). Women have enough potential to contribute to the economic, social, and political dimensions of development. But opportunities for women are limited due to illiteracy, ignorance, and the dominance of patriarchal social norms. UDC is a type of information centre that provides various information and opportunities for rural users, particularly female service seekers. The primary motivations for bringing in UDC are to strengthen local government, provide citizens with e-services, and create self-employment opportunities within UDC (A2I, 2016). It ensures that entrepreneurs and customers save time and money and have operations that are stress-free.

The anticipated study intends to investigate the effect of UDSs on women, with a focus on education and livelihood. It is also intended to highlight the disparity between male and female customers, if any, when delivering services. Similarly, the study has identified the major issues and socio-economic challenges that women face while receiving services from the UDC. This study is basically investigated in the following research questions:

- Does the dissemination strategies used for delivering union digital services in haor areas?
- What kind of Union Digital Services provided by UDC are women in Haor area looking for?

- Is there any effect of Union Digital Services provided by UDC on women's education and employment?
- What are the most critical issues and socioeconomic constraints that women suffer, if any, while seeking services?
- Is there any discrimination when women users come to UDC for services?

### 1.4 Objectives of the Study

Based on the research questions above, the study's general objective is to investigate the dissemination of services provided by UDC and its effect on women in the Haor regions. The detailed objectives of this study are to:

- Describe the dissemination strategies of digital services provided by UDC in haor area.
- Find out the nature of digital services sought by women in the Haor area.
- Explore the effect of union digital services on women in terms of education and employment in haor area.
- Investigate the existence of any gender disparity in receiving UDC-provided services.
- Identify the major problems and socio-economic challenges faced by women, if any, while receiving services.

### 1.5 Justification of the Study

This study is primarily motivated by the widening digital divide and how the digital approach can assist state machinery in achieving inclusive governance and, thus, sustainable development goals. At present, mobile phone and internet subscribers in Bangladesh are 170.137 and 111.875 million, respectively (BTRC, 2020). Among them, most of the users live in urban areas. Subsequently, most rural and marginalised people are not getting the opportunity to enjoy mobile phone and internet service, mainly those who are living in villages. In 2002, the GOB took over ICT policy. By 2006, the goal was to build an ICT-driven country that encompassed an insightful society. As a result, a country-wide ICT infrastructure will be established to confirm each citizen's right to access information, assist people's empowerment, and enrich electoral standards and rules for sustainable economic growth through facilities for human capacity building, governance, e-commerce, financial services, publicly owned amenities, and all types of ICT-enabled likeness services (ICT

Division, 2015). In practice, the education rate for each gender in rural areas is 67.3%, with males accounting for 70.3% and females accounting for 64.4% (BBS, 2018). Similarly, the overall unemployment rate in Bangladesh is 4.15%. The female unemployment rate is 5.98%, and the male unemployment rate is 3.35%. The Haor area is one of the most backward areas in Bangladesh (BIDS, 2021). So, it needs special attention to provide them equal status under the national development scheme.

Additionally, paying special attention to the government will help to reduce existing disparities. Meanwhile, Bangladesh, as a member of the United Nations, has already signed on to the SDGs in 2015. At present, the real crisis in governance is the challenge of establishing equality between men and women. Because this society has been ruled by males, and it has been continuing for a thousand years. Subsequently, women and girls are not enjoying full independence in their personal and family lives in rural areas of this subcontinent. Behind this, they are controlled by the male-dominating society, which is popularly known as a patriarchal society. Therefore, the disparity between males and females has been increasing in different areas like health, education, employment, decision-making in families and institutions, and so on. In these circumstances, the United Nations has already declared Sustainable Development Goals (SDGs), and all member states have signed up to achieve those goals by 2030. Bangladesh also signed this protocol in 2015 and has already taken different actions to achieve the target.

Likewise, the study results will fill the existing knowledge gap by achieving equal participation for males and females through the UDC platform. Meanwhile, women have proved their importance in different development sectors under the digitalization process. This study has examined the dissemination of digitised UDC services and its impact on rural women's advancement in the area. It has tried to find out specific problems women face (as service recipients) while receiving UDC services. The service providers at UDC have cross-checked the feedback of service recipients. The research results have helped achieve inclusive development by excluding disparities between men and women from the experiences of UDC-provided services and by taking appropriate policies regarding the digitalization of public and private services.

## 1.6 Outline of the Thesis

The thesis addresses the historical development of UDCs, their function in e-governance, and the provision of public services at the grassroots level. Chapter one presents the background, problem statement, formulation of research questions, objectives, justification, and structure of the thesis, all of which are elaborated upon in this chapter.

Chapter two presents a comprehensive literature review on Union Digital Centres. It encompasses contemporary studies, research-based analytical texts, and journal articles focussing on innovation in service delivery and UDC, women's issues related to UDC, the Haor regions in Bangladesh, and identified research gaps.

Chapter three outlines the research methodology, encompassing research philosophy, approach, design, methods, data collection techniques, sampling plan and design, reliability and validity assessments, and ethical considerations.

Chapter four presents a theoretical discussion that encompasses the Technology Acceptance Model and Inclusive Governance. The document discusses the triangular relationships among IG, TAM, and UDC, outlines the conceptual framework, and analyses the relationship between IG and UDC.

Chapter five provides a detailed overview of the genesis of UDCs, their evolution, organisational structure, the roles of various stakeholders involved, and the responsibilities of UDC entrepreneurs in the provision of union digital services.

Chapter six provides an analysis of the status of women in Bangladesh, focusing on various aspects such as population size, educational attainment, health metrics, participation in the labour force, political involvement, engagement with information and communication technology (ICT), social status, and instances of violence against women in the Haor regions, all of which are discussed in this chapter.

Chapter seven provides a comprehensive presentation of both quantitative and qualitative data, illustrating the economic and social conditions of the respondents and the influence of union digital services on women's education in haor areas. It includes detailed analyses such as cross-tabulation and binary logistic regression, as well as the qualitative findings of the study.

Chapter eight presents union digital services and their impact on women's employment in haor areas. This includes a detailed analysis involving cross-tabulation, binary logistic regression, and qualitative findings from the study.

Chapter nine examines the dissemination methods of union digital services, evaluates users' perceptions regarding the performance of Union Digital Centres, analyses the types of union digital services requested by women in haor regions, and assesses the impact of Union Digital Services on women in these areas. The document highlights the challenges encountered by women entrepreneurs and UDC in the Haor regions, as well as the current state of gender disparity in the area.

Chapter ten addresses research themes, the conceptual framework, and key findings – a revisitation of the relationship. This section provides an overview of key findings, interprets the study results within the context of the conceptual framework, and presents a comprehensive summary of the research conducted.

Chapter eleven presents the summary results of the study, discusses the implications of the findings, outlines policy recommendations, identifies the limitations of the study, and delineates the scope for future research, and concluding remarks.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Literature Review

The primary objective of a literature review is to prevent the repetition of research efforts. To enhance comprehension of the research problem, a review of pertinent literature has been conducted to delineate the research gap that exists between the existing literature and the proposed study. The results of the literature review encompass multiple facets of union digital services offered by UDC, with a particular focus on women's advancement in areas such as education and employment. These represent

## 2.1 Innovation in Services Delivery and Union Digital Centres

The Asian Development Bank has indicated that the primary means by which individuals engage with their government and bureaucratic systems is through public service. The report, titled "Asian Development Outlook 2013 Update: Governance and Public Service Delivery", examined methods to improve the delivery of public services. The focus has been on strategies aimed at enhancing public service delivery, including citizen empowerment and engagement with local governments and the commerce sector, as well as the development of information and communication technologies (ICT). The implementation of ICT has led to reductions in bribery and corruption by minimising direct interactions with government authorities. This approach serves to protect low-income and marginalised users from potential bribe solicitations (ADB, 2013).

Shahjahan H. Bhuiyan and Taiabur Rahman performed a study entitled Multipurpose Community Telecentres in Rural Bangladesh. The analysis concentrated on the current status of MCTs in Bangladesh and their role in facilitating socioeconomic development within rural regions of the country. It was noted that the development of telecentres in Bangladesh is currently in a basic stage. The connectivity of both Bangladesh's basic infrastructure and information infrastructure is inadequate. Telecentres in Bangladesh have produced two significant outcomes: the digital divide between urban and rural regions has diminished over time, and students and educators in rural schools now possess electronic access to books, research papers, articles, and additional learning resources, enabling them to compete more effectively with their urban peers (Rahman and Bhuiyan, 2014).

Additionally, multipurpose public telecentres have emerged as leaders in innovation, hope, and opportunities for the populace of Bangladesh. The establishment of the UDC represents a significant step forward in Bangladesh's digitalisation efforts. The development of telecentres in Bangladesh is steady during its constructive phase. The emerging middle class has experienced the greatest benefits. Data indicates that the telecentres were ineffective for those who were severely disadvantaged. One significant issue associated with telecentres was the lack of women's rights to access these facilities (Rahman and Bhuiyan, 2014).

The government has implemented various innovations aimed at providing digital services to individuals in rural regions. The public information centre is officially designated as UDC at the union level. The device serves not only to ensure efficacy, success, and accessibility in e-service offerings but also functions as a unique tool for impacting and improving the lives of underserved populations (Hasan, 2015).

Additionally, Faroqi's research addresses the financial viability of the Union Digital Centre in Bangladesh. The analysis focuses on the financial viability of the union digital centres in Bangladesh by evaluating the monthly income generated by the businesses. The objective of the study is to identify characteristics that influence fluctuations in an entrepreneur's income. Upon completion of the research, it was determined that the majority of UDCs possessed fundamental ICT equipment, whereas a subset was equipped with advanced technology capable of delivering a range of services, including certification, e-government, and commercial offerings. Factors such as arrangement and amenity inputs, business potential, and grassroots engagement contribute to the comprehension of sustained monthly earnings. Increasing the units of these elements can play a fundamental role in ensuring the financial viability of all UDCs and preventing entrepreneur dropouts (Faroqi, 2015).

Hasanuzzaman completed the study regarding insights from Digital Bangladesh on innovations in the service delivery process in 2015. The report emphasised Service Process Simplification (SPS), social development outcomes, and UDC sustainability. TCV (time, cost, and visit) serves as a comprehensive government-wide mechanism for the implementation of SPS reform. LGD is responsible for hosting the UDCs, which receive 1% of the annual development budget allocated by the government. A BBS (2014) report indicates that UDCs provide services to 3.91 million rural residents, with over 25% of this population being women, and generate approximately BDT 45 million in revenue. Bangladesh ranks as the foremost recipient of remittances among the least developed

countries. UDCs are encountering challenges in the absence of support from government and business stakeholders. Private commercial banks provide mobile banking services (Zaman, 2015).

A study on UDC will evaluate the effects of UDC on delivering the benefits of e-government and bridging the digital divide. The study indicates that the insufficiency of government services offered by the UDC has the potential to reduce the time, distance, and cost associated with service delivery. It is clear that the contributions of women are assessed in relation to other factors; the UDC has a greater quantity. The success of e-government relies heavily on accountability and transparency; however, the study fails to address these critical factors, representing a significant limitation of the research. In a separate investigation, researchers aimed to determine if UDC promotes gender equality through the provision of paybacks for e-government and its connection to the digital divide (Faroqi, 2015).

The UDCs in Bangladesh are making a notable impact by delivering services directly to residents and contributing to the achievement of the nation's digital objectives. Individuals in rural areas can now access essential information and services at a low cost and with ease, facilitated by the UDCs. Public-private partnerships (PPPs) may serve as a viable option for delivering digital services to the impoverished and marginalised populations of Bangladesh (Rahman, 2016).

In alignment with Vision 2021, the government has been actively engaged in the development of a digital Bangladesh. In this scenario, multiple initiatives have been implemented to engage a wide audience in both urban and rural settings, with a specific focus on marginalised populations in rural regions. The implementation of Vision 2021 presents a complex challenge. The research examines various methodologies and challenges associated with public service delivery in digital Bangladesh, as indicated by the findings. Key strategies include self-service websites, UDCs, Upazila Community e-centres, district e-service centres, Paurashava digital centres, specialised information centres, post-e-centres, and cell phone-based applications. Progress has been made in several areas, including the reduction of the digital divide, enhancement of service delivery efficiency, mitigation of harassment, improvement of transparency and accountability, and reinforcement of connections with local stakeholders (Hasan, 2016).

The Copenhagen Conference Centre and the BRAC research and evaluation department provided funding to Bakshi and Rahman for the preparation of a report on the expansion of selected services via union digital centres, focussing on priorities in Bangladesh. The objective of this study is to analyse the cost-benefit ratios of various government and private services provided by the UDCs. The findings indicate that the services offered by UDCs enable beneficiaries to conserve time and financial resources while reducing the frequency of visits to government offices. Aside from mobile banking, the study indicates that services provided by UDCs, like citizenship certificates, electricity bill payments, and applications for machine-readable passports (MRP), are very affordable (Bakshi and Rahman, 2016).

The research suggests that UDCs in Bangladesh are assisting residents by delivering services directly to their homes, marking a significant advancement towards achieving Bangladesh's digital objectives. Public-private partnerships (PPPs) have been identified as a viable strategy for extending digital services to the impoverished and disadvantaged populations of Bangladesh. Individuals in rural areas are unlikely to experience long-term benefits from access to these services unless they embrace information and communication technology (ICT) and gain awareness of the services and advantages available through online platforms (Rahman, 2016).

A separate study conducted by Hoque and Mahiuddin, titled "Union Digital Centre and Reduction of the Digital Gap: An Analysis of Users' Perception," identified the digital gap, often referred to as "social exclusion," as a prevalent concept. This concept is defined by the disparities in access to ICT and the everyday utilisation of ICT for obtaining livelihood information, which is essential for enhancing social and economic opportunities. A divide is present between urban and rural regions and affluent and impoverished populations, as well as between genders. With the ongoing digitisation of the private and public sectors in Bangladesh, this divide may further expand, potentially hindering the implementation of the e-governance system and the provision of e-services. The findings indicate that individuals in rural areas perceive UDC as a crucial factor in addressing the digital divide within Bangladesh's rural regions. Respondents agree that UDC helps close the digital divide by making it easier to access ICT, offering training for using ICT, helping people get services and information, and improving their economic situation through these resources, which further reduces the digital divide. Stakeholders have the opportunity to improve UDC in order

to make it more effective as a means of bridging the digital divide. Stakeholders should focus on the long-term viability of the centres (Hoque and Mahiuddin, 2016).

This study examines critical factors necessary to ensure the sustainability of union digital centres in Bangladesh. The objective of the study is to identify specific contributing factors, establish a theoretical framework, analyse the experiences of various countries, and provide conceptual explanations to enhance our understanding of the long-term sustainability of UDCs in Bangladesh. The findings of the study highlighted the PPPP (people's private-public partnership) model. Entrepreneurs and Union Parishads played a crucial role in sustaining UDC activities. The sustainability of these UDCs was supported by local government divisions and A2I through the provision of technological, operational, monitoring, and consulting services. Factors to consider include: the revenue, cost, and investment patterns of UDCs; the capacities of businesspersons; civic acceptability; sexual characteristics; institutionalisation patterns; and physical setup. Additionally, financial sustainability serves as the most reliable predictor and is likely the most critical factor in guaranteeing the long-term viability of these UDC activities. It is essential to address various variables concurrently, including social, technical, personnel, management, processes, strategy, and infrastructure. Ultimately, all government agencies can be interconnected with the UDCs via a secure network, facilitating the establishment of a comprehensive service centre for all public services (Kumar and Kim, 2017).

The research examined an additional study that investigated the shortcomings of Bangladesh's Union Digital Centre. The current research must outline the existing state and limitations of UDC, along with potential solutions to the identified problem. The primary findings of the study indicate that UDC is emerging as the exclusive source of information for residents in rural areas. Rural residents have enhanced their quality of life and economic conditions through the use of information. Additionally, this study examined various limitations and proposed methods to address the restrictions of UDC (Islam and Islam, 2018).

Rashid and Shafie (2018) indicate that UDC meets the information needs at the grassroots level. In a similar manner, various public and private utilities extend their services to marginalised individuals, thereby providing underprivileged populations with access to financial services. The designated UNO office conducts a monthly evaluation of UDC performance. UDCs contribute positively to the socioeconomic conditions of rural residents. The services offered by UDC play a crucial role in the advancement of rural regions and

contribute significantly to the overall progress of the nation. The union council digital hub significantly impacts rural life and livelihoods (Rashid and Shafie, 2018).

This analysis examines the expectations and realities of service delivery to rural individuals in Bangladesh. According to research conducted by Shamrat and Hossain, UDC has been identified as an innovative tool in the realm of public management. The focus is on delivering efficient service and ensuring customer satisfaction. The efficient operation of UDC could serve as a valuable non-profit management tool for the government of Bangladesh. If that is the case, UDC could serve as a crucial component in achieving the government's vision for a digital Bangladesh. The report indicates that UDC demonstrates efficiency in the majority of circumstances regarding service provision; however, the timeliness of these services remains a significant concern. The organisation is striving to provide the highest quality of services possible in its present capacity. Individuals gain advantages from enhanced services and a wide range of supplementary amenities offered by the facility. A significant proportion of service consumers express satisfaction regarding the quality of services and the pricing of transactions. Additionally, there remains a lack of adequate advertising initiatives to inform the public regarding the services offered by the UDC. Frequent power outages and slow internet connectivity represent significant barriers to the advancement of UDC. The absence of adequate infrastructure facilities presents a considerable risk to operational efficiency. The absence of commitment from local political leaders may impede the timely delivery of services. Residents in rural areas now have improved access to expedited services and enhanced information regarding agriculture, health, education, and employment. The UDC operator facilitates access to e-services for individuals who are unable to recite or write (Shamrat and Hossain, 2018).

The Bangladeshi government has implemented a distinctive digitalisation initiative through the UDC. The services offered by the UDC are classified into three distinct categories: government services, information services, and commercial services (Hoque & Mahiuddin, 2013). The document outlines the various objectives of the UDC, which include facilitating access to services for rural populations, developing ICT infrastructure, enhancing the efficiency of the UP, fostering a conducive environment for entrepreneurs, and creating a supportive framework for empowering rural communities (Mamun and Begum, 2018).

An official evaluation conducted by the Bureau of Statistics indicated a notably high rate of operator dropouts within the programme, attributed to multiple operational and managerial

challenges. Additionally, numerous operators perceive their service as informal and exhibit minimal interest in investing in or expanding their UDC operations in a professional manner. The objective of this research is to enhance understanding and identification of the fundamental characteristics and trends associated with UDC operations that may account for the rise in private enterprise among operators. The research indicates a lack of entrepreneurial capacity among operators, suggesting that many lacked prior computer skills before joining the UDC. The data indicates that a significant number of operators are hesitant to participate, partially due to insufficient financial resources. Additionally, some perceive participation as risky because of the volatility associated with their UDC position. Another observation indicates that the Union Parishad is not providing sufficient cooperation. Operators function within a regulated environment and are classified as subordinate to the UP secretary. Under specific conditions, UPs deduct a portion from operators' earnings, which impacts their overall income and may lead to job loss. Numerous UDCs face challenges in delivering activities of daily living, online purchases, or e-commerce as a result of an unreliable e-payment system, which is attributed to insufficient government engagement. Operators that provide a diverse array of services demonstrate a higher likelihood of achieving profitability. UDC has the potential to foster entrepreneurship among operators due to its utilisation of a diverse array of tools and superior internet quality, the provision of a broader spectrum of services to a larger user base, the acquisition of stakeholder support, and the demonstration of computer and administrative skills. The government influences the execution of work, personnel management, and supervision (Faroqi, 2019).

The UDC serves as a pivotal point for decentralising service delivery, improving local administrations, and empowering communities. The quality and effectiveness of specific electronic services are primarily influenced by the satisfaction and feedback of the local population. The UDC has demonstrated progress in addressing disparities related to gender, education, vocations, and income in the context of the digital divide. Not all UDCs have implemented agriculture, the internet's unresponsiveness, and livelihood-related services uniformly (Khadiza and Ullah, 2020).

In 2020, Mahfuzur Rahman and colleagues conducted a study focused on information services, union digital centres, and rural development. The objective of the study was to acquire a comprehensive understanding of the responsibilities of the union digital centre in various sociopolitical and economic aspects of the developing rural regions of Bangladesh.

Research indicates that UDC serves as an effective method for improving the rural community in Bangladesh through the implementation of technology-driven information services. Additionally, it has addressed multiple UDC issues, such as gender discrimination, logistical support, entrepreneur selection, and coordination deficiencies, among others (Rahman et al., 2020).

In 2021, Abedin et al. examined the role of union digital centres in mitigating social inequalities in Bangladesh. The objective of this study is to assess the influence of UDCs on the eradication of social inequity. The objective is to identify the barriers to providing digital services to the underserved population within the community. The study's results indicate that UDCs introduce an additional dimension to the public service delivery system in rural areas of Bangladesh, facilitating empowerment and diminishing socioeconomic disparities. The report indicates that UDC's service delivery has effectively minimised distances, time, costs, and instances of harassment for the general population. UDC enhanced citizen empowerment and improved access to digital services for grassroots populations in rural areas by providing the necessary information to the public. UDC engaged in the provision of public services to enhance social awareness and safeguard individual rights. The UDC enhanced citizen trust in government services through improved public accessibility. Implementing the UDC enhances the politeness, helpfulness, and accountability of service providers towards their customers. UDC possesses the capability to close the information divide that exists between rural and urban populations. Furthermore, obstacles to reaching this objective consist of insufficient awareness among rural populations regarding digital services, favouritism in the selection of entrepreneurs, ongoing conflicts between the UP secretary and UDC entrepreneurs, and the inadequacy of UDC's infrastructure (Abedin et al., 2021).

As of December 2018, a cumulative total of 39.21 million recipients had accessed more than 150 e-services, which included 69 government amenities, 80 private services, and over 10 lending and 15 monetary services. The standard distance between service access locations, specifically the union digital centres, has been reduced to 4 kilometers—a decrease from the previous distance of 5.5 kilometres recorded in 2015. The study indicates that the project has enhanced the accessibility of public services for approximately 150 million citizens, a significant portion of whom belong to underserved groups. The a2i project's 5300+ UDCs are a key component of the initiative, contributing to a 57 per cent reduction in time, cost, and visit (TCV) associated with accessing services. The organisation is acknowledged as a

platform that distributes services door-to-door, expanding its service offerings to the underserved regions of rural Bangladesh. Private sector organisations are delivering e-services to a significant number of beneficiaries (Rahman et al., 2019).

Bangladesh, characterised as a rural-based country, encompasses a land area of 141,770 square kilometres and a population of 154 million individuals. More than 80% of the population resides in rural areas, with numerous villages still experiencing a lack of electrical power. Establishing an ICT-based centre in every union, which represents the lowest level of local government in Bangladesh, is recognised as one of the best practices for the country's e-administration initiatives. The information and communication technology centres in Bangladesh were established through a public-private partnership model, with sponsorship from the relevant Union Parishad and oversight by the central administration. The Local Government Division collaborates with the Cabinet Division and the Bangladesh Computer Council to establish the fundamental ICT infrastructure. This infrastructure encompasses computers, laptops, printers, projectors, digital cameras, webcams, and solar panels. The deputy commissioner's office has established specific criteria for the selection of entrepreneurs possessing suitable computer skills. A financial investment is made at the centre, and a profit share is received based on the agreement established between the relevant union parishad and the businesses. Entrepreneurs have the opportunity to construct new facilities to support business expansion while also promoting the social sustainability of the centre (Hossain et al. 2019).

The Bangladesh Bureau of Statistics reports that there are currently 4,492 UDCs in operation, with a target of 4,533. The remaining 41 UDCs are non-operational and cannot be utilised. The UDC delivers direct information and services to 3.91 million citizens. Monthly production by UDCs is reported to exceed BDT 4.65 million, which is almost half a million dollars, USD 545,337 (BBS and A2I, 2014).

### 2.2 Women Issues and Union Digital Centres

A study has been performed to assess the function of the UISC in community development. The researchers identified that UISC has been significantly contributing to four key aspects of community development, with women’s empowerment being one of them. Research indicates that, with the assistance of UISC, women have enhanced their education and

expanded their knowledge via the internet. However, in the context of decision-making in UP, they continue to experience a lag (Shahnewaz et al., 2015).

A recent survey of UDC consumers revealed gender disparities in service access, with a higher rate reported by males. The core problem pertains to opportunity rather than gender considerations. Nepotism, bribery, increased charges, ignorance among entrepreneurs, harassment, and a reluctance to provide services—primarily stemming from ignorance and illiteracy—exemplify the inequities present in service delivery. The term "gender inequality" serves as a more accurate descriptor, as it acknowledges that both genders encounter inequities (Islam and Khan, 2021).

The constitution of Bangladesh mandates that all citizens are entitled to equal rights and participation across all areas of life. Women are often regarded as a group that makes sacrifices within society. This study indicates that rural women utilise ICT tools for communication and information acquisition. Accessing government services and conducting financial transactions represent additional primary objectives. Another finding indicates that the internet is enhancing women's awareness of their rights (Hasan, 2020).

A new study, titled ‘Urban Women and Digitalisation’, has been identified in India. The observation indicates that women have consistently held a subordinate role in household decision-making processes, despite their continued lack of sufficient resources to empower themselves. This study indicates that females depend on their household head for financial decisions both prior to and following marriage (Sinha and D'Souza, 2017).

A report on digitalisation and its impact on women outlined several dimensions of it, including flexible working hours, training and lifelong learning, increased demand for specific skills, and an expanding technology gap, among others. However, women are unable to leverage the advantages of digitalisation. The primary factors contributing to this situation are increased family obligations and a range of socio-cultural limitations. Considering that women continue to bear a disproportionately large share of family responsibilities, they use flexible working hours to engage in extracurricular activities and complete various tasks. Consequently, they lack the time to engage in additional training and ongoing education. Conversely, individuals are often deterred from pursuing careers in science, technology, engineering, and mathematics (STEM) or computer science due to the perception of these fields as male-dominated. This perception contributes to an increased technology gap.

Several measures are proposed to mitigate the gender gap and promote a balanced society (UNI Global Union, 2017).

Islam and Slack (2016) indicate that cellphones are perceived as a tool for advancement and economic growth in regional and underserved areas of developing countries. The accessibility and utilisation of information technology, including handheld devices, is believed to have facilitated the advancement of women among the local population in Bangladesh by enhancing connectivity. Mobile phones facilitate straightforward access to health-related services. Although the influence of cellular applications on promoting girls' education appears to be limited, they inadvertently contribute to enhancing girls' safety. The report indicates that women's living standards have improved because of greater access to the economy and more opportunities for income generation. The availability of mobile phones provides rural women with enhanced independence and empowerment. Mobile phone technology has the potential to assist rural women in enhancing their living standards, which may lead to personal growth. In conclusion, the integration of low-cost smartphones necessitates a comprehensive and innovative application of information technology to enhance the progress of women in rural regions (Islam and Slack, 2016).

Women’s roles in the Haor region are undergoing gradual changes due to various economic, social, and environmental factors. However, religious conservatism is identified as a significant barrier to women's empowerment in northeast Bangladesh. In northeast Bangladesh, traditional and patriarchal social norms delineate gender roles that restrict women's economic participation, involvement in groups and social networks, mobility, and decision-making capabilities. Women residing in the haor region encounter significant workloads, experience food insecurity, and suffer malnutrition, in addition to facing domestic violence. In the haor area, men frequently rationalise their dominance over women by referencing their role as the primary or sole earners within their households (Gillingham, 2016).

The objective of this research is to investigate the gender-based challenges encountered by women when accessing services from the UDC. The statement regarding gender inequality indicates that a significant gender gap exists across various sectors in developing countries. Cultural practices and norms, including the preference for sons, the dowry system, patrilineality, and patrilocality, have led to heightened gender inequality. This, in turn, has resulted in economic underdevelopment and domestic violence, among other issues. The

researcher indicated that as the country has developed, gender gaps have diminished and subsequently proposed several policy measures to address gender inequality (Jayachandran, 2015).

This study is pertinent as it addresses community development and the empowerment of women. UISC has the potential to enhance various socio-economic sectors in Bangladesh. The results indicated a notable impact of the UISC in areas such as agriculture, education, and awareness. Additionally, certain adverse factors, including the digital gender divide, were identified. The researchers identified the socio-political conditions of Bangladesh as the underlying cause of this inequality (Hoque and Sorwar, 2015).

The concept of sustainable development stresses the importance of inclusive development. Development encompasses multiple dimensions. Development efforts have primarily concentrated on enhancing the circumstances for marginalised populations. The employment of skilled individuals is necessary for this purpose. Individuals residing in urban areas comprehend this concept effectively. Consequently, both skilled and prospective workers generate income concurrently. In rural areas, the situation reverses. As a result, the disparity between men and women has increased recently. The concepts of equality and women's empowerment have catalysed the inclusive development of a nation. UDC plays a crucial role in reducing the disparity between males and females. The assessment of gender equality for both males and females is conducted through various indicators, specifically focusing on education, health, poverty levels, decision-making roles within households and society, instances of violence against women, economic participation, and equitable access to services. World Vision Bangladesh has outlined specific strategies for assessing gender equality, which include measuring the incidence of violence against women, ensuring equal access to services, and evaluating equality in decision-making processes (WVB, 2010).

Women in Bangladesh contribute significantly to the development of their families, communities, and society. In rural Bangladesh, the population typically exhibits low literacy rates, limited self-confidence, and restricted mobility. Currently, women's offers remain unrecognised and unacknowledged. The advancement of ICT is contributing to a significant decline in conservative attitudes towards women. The report indicates that women's access to the job market and entrepreneurship has improved due to information and communication technology (ICT). The utilisation of ICT by women serves to support their families, resulting in a notable increase in their income. This enhancement in financial contribution has elevated

women's status both within their households and in the broader societal context. Women are recognised as a valuable yet underutilised resource in bridging the skills gap within critical ICT professions. Digital technology has enabled women to express themselves more effectively within the household and in broader national and international contexts. The implementation is proceeding effectively in the southern region of Bangladesh, where the 'Amader Gramme Knowledge Centre' has integrated 20 villages into its framework (Ahmed et al., 2006).

### 2.3 Haor regions in Bangladesh

The term 'Haor' originates from the Sanskrit language, where it is known as 'shagor', signifying 'sea'. The region is characterised by marshland ecology and is located in the north-eastern district of Bangladesh. It features a low-lying area resembling the shape of a vessel. The area is approximately 1.99 million hectares, with a population estimated at two hundred thousand individuals (MOWR, 2012a). The total number of haor/wetlands located in the districts of Sunamganj, Sylhet, Habiganj, Maulvibazar, Netrakona, Kishoreganj, and Brahmanbaria is 373. The 373 haors encompass approximately 859,000 hectares, representing about 43% of the total area within the haor district region. The Haor region, located in northeastern Bangladesh, exhibits the highest dropout rates in the nation. The employment rate serves as a standard metric for assessing job opportunities, as it indicates the quantity of individuals aged 15 and older who are actively participating in the economy. At present, it is anticipated that 61.84 per cent of the economically active workforce in the Haor area will be engaged in work activities. The sex ratio in the Hoar regions is 100 females to 99.27 males, indicating that the male population is lower than the female population. All Haor districts, except for Sylhet and Sunamganj, exhibit a comparable situation (Suvra, 2021).

The study conducted by Uddin et al. examines the business opportunities and challenges present in the rural regions of Bangladesh. Haor is a low-lying waterway region situated below the overflow plain, resembling wetland terrain that remains submerged for approximately half of the year, commencing with the onset of the rainy season. The haor area has historically experienced a delay in aligning with mainstream national development, despite the consistent and stable improvement of Bangladesh's economy. The overall prosperity of the country cannot be envisioned without considering the development of the Haor area, which covers a significant portion of the nation and is home to a population that

requires targeted support. Bangladesh has experienced a yearly GDP growth rate of 6.6 per cent, indicating notable improvements in its economic, social, and health conditions (WB, 2016). Although the overall situation in the country appears positive, the residents of the haor regions have not yet experienced a comparable degree of kinship or comprehensive improvement. Improvements in this area may lead to increased output, employment, and a reduction in poverty (Uddin et al., 2019).

### 2.4 Research Gap

A number of studies have investigated different perspectives regarding public and private service delivery by UDCs, women, and haor regions, with the objective of achieving a thorough understanding of the pertinent literature. Notable studies within this domain concentrate on various topics, including the digital divide, the mitigation of social inequalities, the operational efficiency and effectiveness of UDCs, client satisfaction levels associated with UDCs, the promotion of entrepreneurship, the sustainability of UDCs, the facilitation of e-services for rural communities, the process of digital transformation, the roles, capabilities, expectations, and challenges faced by UDCs in delivering amenities, the socio-economic status of women, the demographic characteristics of haor regions, and the evaluation of e-government initiatives and rural women's rights. The distribution of digitised UDC services and their impact on women's advancement in the Haor region indicate a significant research gap. This study has demonstrated the overall condition of service seekers in UDC and highlighted the disparity between men and women in the provision of UDC services. It aimed to identify the primary issues and socio-economic challenges encountered by women when accessing services from the UDC. This study specifically examined the cause-and-effect relationship between the dissemination of union digital services and their impact on women in the Haor regions, with a focus on the districts of Kishoreganj, Sunamganj, Netrakona, and Brahmanbaria.

# CHAPTER THREE

# METHODOLOGY OF THE STUDY

## 3.0 Introduction

This chapter lays forth a plan for collecting data and information from respondents. A number of methodological techniques were employed to collect the data. The purpose of this research is to look at different ways of disseminating Union Digital Services and their impact on women in the Haor area of the country. Both qualitative and quantitative data collection methods were utilised to meet the study's objectives. It covered research methodology, namely research philosophy, research design, types of research, research methods, approaches to the study, data collection techniques, sources of data collection, study area, sampling for the questionnaire survey, sample size and sampling plan, data analysis procedures, ethical considerations, and the study's validity and reliability.

## 3.1 Research Philosophy

In reality, research philosophy (RP) is focused on the upcoming investigation. It has to do with assumptions, knowledge, and the purpose of the study. It is concerned with the origins, nature, and evolution of knowledge (Bajpai, 2011). In its most basic form, research philosophy is a set of beliefs about how facts on a topic should be acquired, analysed, and applied. Research philosophy has different paradigms, namely positivism, post-positivism, constructionism, and pragmatism.

### 3.1.1 Positivism as a research philosophy

It's tough to put into words how positivity works. It is founded on the belief that science is the best approach to discovering the truth. Positivism is a philosophy that holds that only factual information derived via observation, including measurement, is reliable. In positivist investigations, the researcher's participation is confined to data gathering and objective interpretation. In other words, the researcher is an impartial analyst who conducts the study while separating himself or herself from personal principles. It is based on observable data that leads to statistical analysis. It has been pointed out that positivism, as a philosophy, is consistent with the empiricist idea that knowledge is derived through human experience. It takes an atomistic, ontological approach to the world, seeing it as a collection of separate,

observable elements and events that interact in predictable, consistent, and regular ways (Collins, 2010). Furthermore, in positivist studies, the researcher is separate from the study, and there are no safeguards in place to protect human interests. Crowther and Lancaster (2008) believe that, in general, positivist studies take a deductive approach, whereas phenomenological studies take an inductive one. Likewise, positivism refers to the idea that investigators should focus on facts, while phenomenology focuses on meaning and allows for human interest. In other words, positivist studies are based solely on facts and assume that the universe is external and objective. The following are the five fundamental concepts of positivist research philosophy: The principle of inquiry is the same in all sciences; the research should be empirically observable through the human senses. As a result, inductive reasoning should be used to generate claims (hypotheses) that can be tested during the research process. Common sense shouldn't skew research findings; instead, science should be value-free and evaluated solely on the basis of logic.

### 3.1.2 Post-positivism research philosophy

When examining human behaviour and activities, the word post-postivism refers to post-positivist thought, which questions the traditional concept of absolute truth in knowledge and accepts that we cannot be certain of our knowledge claims (Phillips and Burbules, 2000). Included are Comte, Mill, Durkheim, Newton, and Locke, all of whom lived in the nineteenth century (Smith, 1983). Writers such as Phillips and Burbules have lately stated it. Postpositivism is a deterministic worldview in which effects or outcomes are most likely determined by causes. As a result, postpositivists' research reflects a desire to investigate the factors that impact outcomes. It is also reductionistic in that the goal is to condense the ideas into a limited, distinct collection of concepts to test, such as hypotheses and research questions. Some fundamental assumptions, according to Phillips and Burbules (2000), are that knowledge is hypothetical and anti-foundational—absolute truth can never be found—and that research is the process of establishing claims and then refining or rejecting some of them in favour of more strongly supported arguments. The majority of quantitative research begins with a theory test. Data, facts, and sound reasoning shape knowledge. The goal of research is to come up with accurate factual claims that characterise the causal relationships that are of interest. Researchers advance the link between variables in quantitative studies by inquiring about hypotheses.

### 3.1.3 Interpretivism as a research philosophy

Interpretivism entails researchers interpreting study materials; as a result, interpretivism incorporates human concerns into research. As a result, interpretative scholars think that only social constructs such as language, awareness, common meanings, and tools provide access to reality (Myers, 2008). The critique of positivism in the social sciences served as the foundation for the creation of interpretivist philosophy. As a result, qualitative analysis takes precedence over quantitative analysis in this worldview. Interpretivism is a term that is associated with the philosophical position of idealism and is used to group together a variety of approaches, such as social constructivism, phenomenology, and hermeneutics, that reject the objectivist view that meaning exists in the world independent of consciousness (Collins, 2010). According to the interpretivist method, it is critical for the researcher to comprehend distinctions between people as social actors (Saunders et al., 2012). Furthermore, interpretivism studies typically focus on meaning and may use a variety of methodologies to reflect various facets of the subject.

### 3.1.4 Pragmatism as a research philosophy

Only notions that assist action are considered significant by the pragmatic research philosophy. Pragmatics recognises that there are several ways to perceive the world and conduct research, that no single point of view can ever provide the complete picture, and that various realities may exist (Saunders et al., 2012). The two extreme theories of positivism and interpretivism concerning the nature and sources of knowledge are mutually contradictory. According to pragmatism in research philosophy, the most essential factor in research philosophy is research questions. Within the span of a single study, pragmatics can integrate both positivist and interpretivist viewpoints, depending on the nature of the research issue. Unlike positivism and interprevitism research philosophies, pragmatism research philosophies may incorporate many research approaches and research strategies within the same study, as seen in the table below. Furthermore, studies based on a pragmatist research ethic can use numerous research methodologies, such as qualitative, quantitative, and action research.

Table 1: Philosophy of the research

| Research Philosophy | Research Approach | Ontology | Axiology | Research Strategy |
|---|---|---|---|---|
| **Positivism/ Postpostivism** | Deductive | Objective | Value-free | Quantitative |
| **Interpretivism** | Inductive | Subjective | Biased | Qualitative |
| **Pragmatism** | Deductive/inductive | Objective or Subjective | Value-free/biased | Qualitative and/or Quantitative |

According to the literature review, the dissemination of union digital services provided by UDC research allows for both quantitative and qualitative research. To learn about real issues like union digital service delivery issues like financial benefits, infrastructure facilities for UDC users, relationships between partners, and effects on women, the study need to use quantitative measures. On the other hand, qualitative research can be used to look at longer-lasting effects that are harder to measure, such as consensual relationships, hidden interests among stakeholders, and actual partner interactions. As a result, this research adopts a hybrid method. This study is guided by the quantitative methodology, which utilises a survey design, while the qualitative method relies on interviews, FGD, and secondary sources.

### 3.2 Research Design

Quantitative research is done to establish and quantify the connection between dependent and independent variables. Various statistical methods were used to express the connection between variables (Cresswell, 2003). The flow chart below shows an overview of the study design.

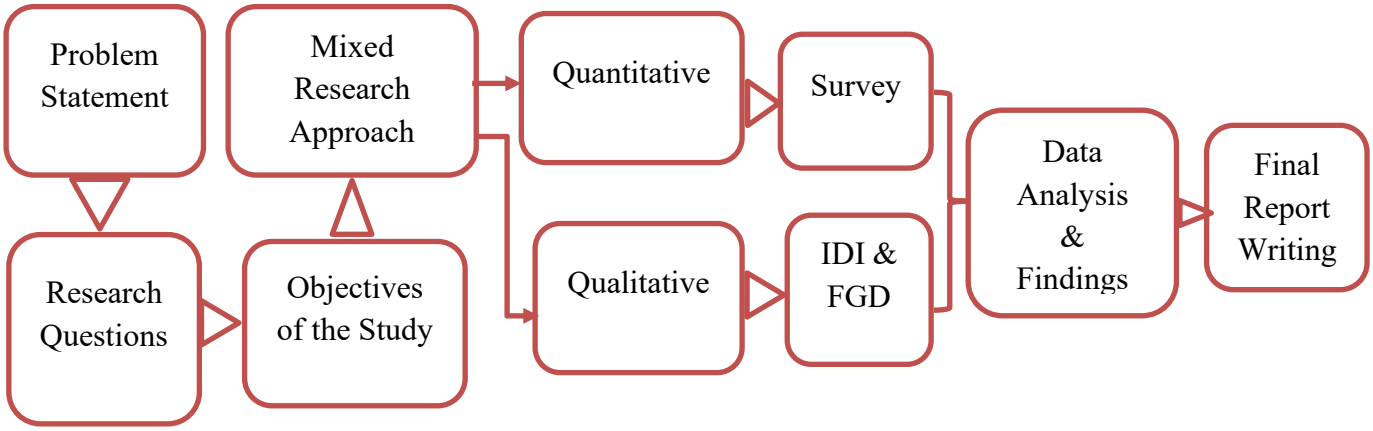



Figure 1: Research design of the study

### 3.3 Types of Research

The research is mostly explanatory and exploratory in character. It's exploratory because, while a lot of research has been done on different aspects of UDC, no study has been done on how union digital services are distributing and how they affect women in the haor areas. This is explanatory research since the cause-and-effect relationship between the dependent and independent variables has been proven to explain the link between union digital services and women in haor area. New ideas and insights emerged as a result of this research.

### 3.4 Research Approach

A mixed research approach means a combination of qualitative and quantitative data have been applied here to attain the objectives of the study.

#### *3.4.1 Quantitative Research*

Quantitative research entails creating numerical data or data that may be converted into useful statistics in order to quantify an issue. It's used to measure attitudes, views, actions, and other specific factors around union digital services and the socio-economic status of rural women, as well as to generalise results from a broader sample group. Quantitative research is a type of study that uses quantifiable data to create facts and find patterns.

### *3.4.2 Qualitative Research*

The most frequent form of qualitative research is exploratory qualitative research. It is used to get a better understanding of the underlying reasons, attitudes, and motivations for the adoption of union digital services, as well as their impact on women in the Haor area. It provides in-depth information about prospective research. In addition, this technique assists in a better understanding of UDC and other characteristics of women in haor regions.

### *3.4.3 Why a Mixed Research Approach*

In nature, the mixed research approach consists primarily of a blend of qualitative and quantitative studies. This research is built on the foundation of both types of data. Both study methodologies were employed based on the literature review's findings. The mixed-methods research approach is appropriate to fulfil research goals. The rationale for the quantitative research approach is the flexibility of data collection; a qualitative approach is necessary for an in-depth understanding of the subject, and a quantitative approach is typically used to perform a large-scale study. An international standard sample size is required to satisfy the study's goals. Respondents are more easily reached by the survey.

Qualitative data is also required for data interpretation and cross-checking of research findings. Furthermore, different UDC stakeholders, such as entrepreneurs, are directly responsible for providing services to beneficiaries, while other stakeholders, such as the UP chairman, Deputy Director of Local Government (DDLG), Upazila Nirbahi Officer (UNO), and Additional Deputy Commissioner (ADC) education and ICT, serve as monitoring and supervision authorities. In-depth interviews help to determine the empirical field story of UDC's real-world performance.

## 3.5 Data Collection Techniques

Data and information were acquired using both quantitative and qualitative methods, and a mix of primary and secondary sources was used.

### 3.5.1 Questionnaire survey for UDC’s beneficiaries

The study's requirements dictate the data collection methods employed. UDCs have been providing digital services since 2010 and possess extensive expertise in this area. To achieve

the objectives of the study, it is crucial to employ both structured and semi-structured questionnaires. This research utilises a questionnaire survey to gather primary data from UDC users, comprising males and females aged 18 and above in haor regions. The questionnaire included both structured and semi-structured questions. The questionnaire underwent pretesting prior to the survey administration. The survey was administered using an interview schedule (Kumar, 2018). The survey looks at the socio-economic profiles of respondents, users' perceptions regarding the performance of UDCs and the methods of disseminating union digital services, the types of digital services sought by women in haor areas, and the impact of these services on women in those regions. The selection of male service users aimed to gain insights into their perspectives regarding women's advancement following their engagement with UDCs in the haor regions of Bangladesh. The collected data was analysed to identify the types of UDC services sought by women and to examine potential differences in service reception between male and female UDC users.

### 3.5.2 In-depth interviews

An in-depth interview (IDI) is a qualitative data-collecting method. It is fundamentally an unstructured interview. The comprehensive interview is rather straightforward (Kumar, 2018). Taylor and Bogdan (1988: 77) define in-depth interviewing as a series of face-to-face interactions between the researcher and informants aimed at comprehending the informants' viewpoints about their lives, experiences, or circumstances as articulated in their terms. One effective qualitative research strategy involves conducting detailed individual interviews with a limited number of respondents to gain insights into their perspectives on a specific topic, program, or situation (Boyce and Neale, 2006). This study utilised in-depth interviews with important informants, including the UP Chairman, UDC entrepreneurs, civil society members, women affairs officers, and government officials, such as the Deputy Commissioner, Deputy Director of Local Government, Additional Deputy Commissioner (Education and ICT), and Upazila Nirbahi Officer (UNO). Additionally, ICT experts at the research locations and the A2I Project Director at the national level were included as significant informants in the studied areas. The researcher obtained informed consent from the participants and subsequently announced their involvement. Participants have the autonomy to exit interviews at any point, regardless of their completion status. The researcher conducted comprehensive interviews, utilising an interview checklist. In-depth interviews addressed the research objectives. The findings from the in-depth interview corroborate the

UDC user responses in this study. The IDI was selected due to its capacity to gather insightful information pertaining to research questions. The investigator maintains complete control over the distribution of the method in this primary data collection, allowing for clarification of specific topics as needed throughout the process. Upon obtaining the respondents' consent, all discussions were recorded and subsequently transcribed into English.

### 3.5.3 Focus group discussion

The researcher examines the perceptions, experiences, and comprehension of a group of individuals sharing common knowledge related to a certain circumstance or event during a focus group discussion. Additionally, focus group participants express their viewpoints during discussions on these issues (Kumar, 2018). The purpose of the focus group is to get more information from UDC users about the effect of union digital services, notably education and employment, on women in haor areas. It allows the researcher to concentrate on women's developments in their residential regions as a result of UDC's performance. Because disadvantaged people, such as women in the studied locations, are less expressive and often introverted, simply filling out the survey questionnaire will not provide enough information (Blaikie, 2009; Cresswell, 2007). Intellectual citizens are the bright spots in society, actively concerned about community interests and citizen rights due to their informed status. The focus group discussion included participants from various community-based organisations (CBOs), specifically BRAC, ASA, Grameen Bank, FIVDB, Mahila Samajkallan Samity, BARSIK, POPI, PADAKEP, and MUK, as well as female users from the studied areas. The investigator conducted 16 focus group discussions across various haor-based upazilas, specifically in Mohanganj, Atpara, Kalmakanda, Madan, and Khaliajuri within the Netrokona district; Tahirpur, Shantiganj, Dharampasha, Jagannathpur, and Derai in the Sunamganj district; Itna, Mithamoin, Austragram, Nikli, and Bajitpur in the Kishoreganj district; as well as Nasirnagar in the Brahmanbaria district. Field enumerators obtained permission for tape recording prior to the commencement of the focus group discussion (FGD). All conversations were recorded and subsequently transcribed into English.

### 3.6 Sources of data collection

This study used both primary and secondary data. Primary data constitute the empirical findings derived from the study. In a similar manner, secondary data facilitates the acquisition of knowledge pertaining to the study's problem.

#### 3.6.1 Primary sources

The primary data sources include users, entrepreneurs, management authorities, the UP chairman, civil society members, and community-based organisations. Data collection employs both quantitative and qualitative methodologies. The primary data sources in this study were examined through methodologies including a questionnaire survey, in-depth interviews, and focus group discussions. Primary data and information are utilised to address research objectives one through five (1–5), specifically.

#### 3.6.2 Secondary sources of data

Secondary data refers to information that has been previously published in various formats, including books, newspapers, magazines, journals, and other online sources. To enhance the validity and reliability of research, it is crucial to apply an appropriate set of criteria when selecting secondary data for inclusion in the study. Secondary data was collected from a range of sources related to the services of the UDC and women's issues. This included A2I websites, pertinent theses, national and international reports, the UISC Survey-2013, the BBS Report-2011, the Statistical Year Book-2020, the Population and Housing Census 2022, journal articles, conference proceedings, books, and editorials and sub-editorials from daily newspapers. Additionally, policy documents, including circulars and letters, were collected from various government agencies, such as district administrations, the Local Government Division (LGD), and the Aspire to Innovate (A2I) office. The literature review, along with the policy and managerial challenges in Bangladesh, was developed using secondary sources to enhance the empirical data. Secondary data was collected to address research questions related to policy, management, and implementation methods. This data also aimed to enhance understanding of information and service sources, operational issues, constraints, and challenges encountered by UDC. While this data can be used to address any research inquiry, it is primarily intended to respond to specific research questions.

### 3.7 Study area

The north-eastern region of Bangladesh has an exclusive identity because of its hydro-ecological features. The region has distinct natural landscapes called the haors. The Haor region consists of 7 districts, 69 upazilas, and 621 unions in the north-east region of Bangladesh (Plan, 2012). This study covers eighteen UDCs of the Haor regions of Bangladesh, selected specifically based on the variation in the nature of the landscape, livelihood of the people, and sources of income. The Haor area has flat land with a monolithic culture of people who share the same religion and a similar way of life (primarily agriculture). The basis of the economy is agriculture. The literacy rate is low. The landscape of study areas is represented by haors, which are vast low-lying lands. Many of the inhabitants are illiterate, and their main sources of income are agriculture and fisheries (Ayers & Forsyth, 2009). The Haor Region is depicted in the following:

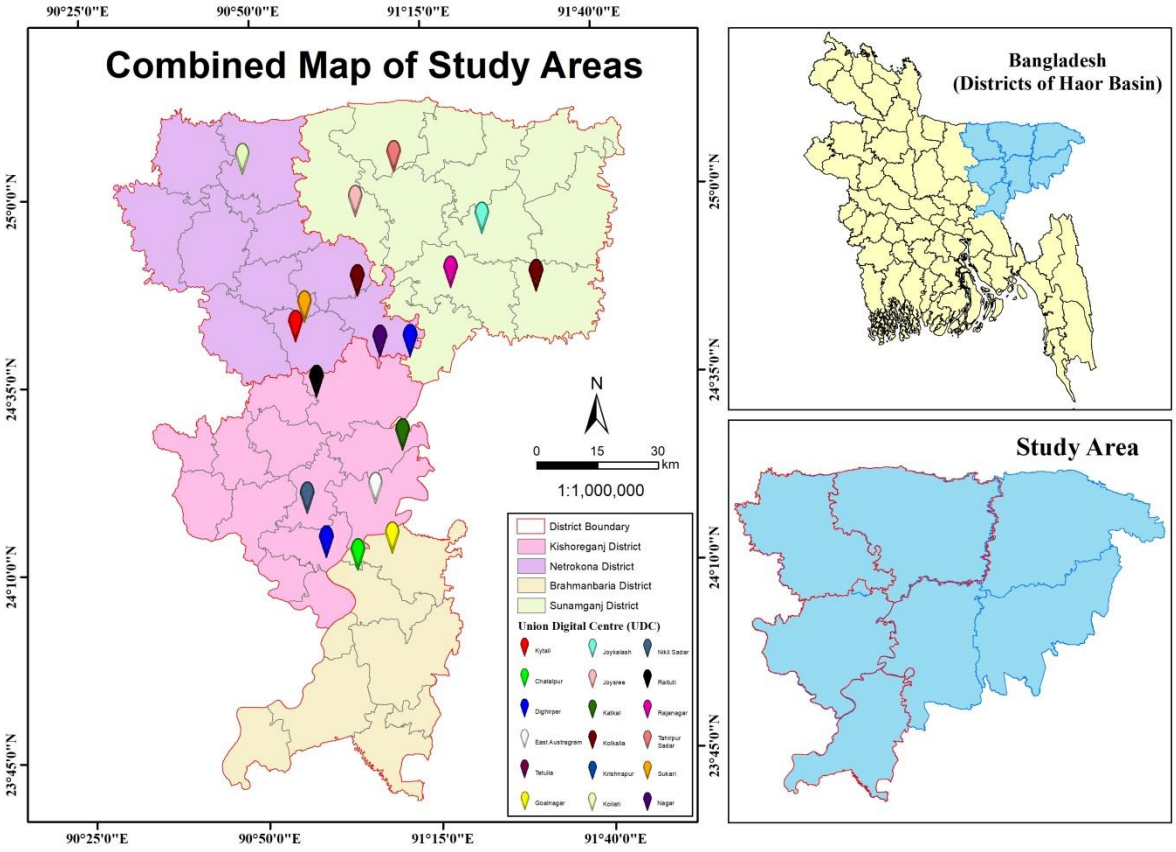



Figure 2**:** The map of study area.

### 3.7.1 Justification of the study area

The World Bank currently identifies Bangladesh as a model for global development following its fifty years of independence. Significant advancements in the economic, social, and health sectors have occurred during this period, as evidenced by a GDP growth rate of 6.6 (WB, 2016). The World Bank has recently published a development narrative regarding Bangladesh on its website, highlighting various advancements in human development, industry, electricity, and climate change resilience (WB, 2021). Despite the overall promising conditions in the country, residents of the haor areas have not experienced comparable levels of relative or absolute progress (Uddin et al., 2019). The haor regions in north-eastern Bangladesh encompass approximately 2.0 million hectares and support a population of around 19.4 million individuals. In a similar manner, 373 Haors encompass an area of approximately 858 thousand hectares, representing roughly 43% of the overall area of the Haor region (MOWR, 2012a). The selection of this area is intended to provide a clearer understanding of the conditions of UDCs and the status of women in authentic rural settings. Furthermore, inclusive governance denotes the involvement of all stakeholders. The advancement of a nation is contingent upon the active participation of all individuals, with particular emphasis on the inclusion of women. The researcher possesses familiarity with the culture, dialect, religion, values, and local language of this area, as well as the methods for engaging with the local population.

## 3.8 Sampling for the questionnaire survey

Sampling techniques and sample size estimation are the key activities undertaken while designing any research. An adequate estimate (not less and not more) of sample size is important for ethical, scientific, and logistic reasons. The units of analysis for the quantitative survey have been the service recipients from the UDC in haor area. To conduct this study, the multi-stage sampling technique was used as probability sampling. In the multistage sampling method, the researcher chooses a sample in two or more stages because either the researcher cannot easily identify the population or the population is extremely large. Breaking down the process makes it easier to identify groups and locate lists (Creswell, 2012). The study adopted mainly a multi-stage sampling technique. Considering this fact, four administrative divisions, seven districts, sixteen Haor-based Upazilas, and 129 Union Parishads make up the Haor regions (MOWR, 2012a). Except for Nasirnagar Upazila in Brahmanbaria district, one district was chosen at random from each division, and five Haor-based Upazilas were chosen

at random from each district. Similarly, 18 UDCs were chosen at random from a pool of 129 UPs. Finally, 720 service recipients were chosen at random from the eighteen UDCs' in studied areas.

This selection process can be shown in the following way_

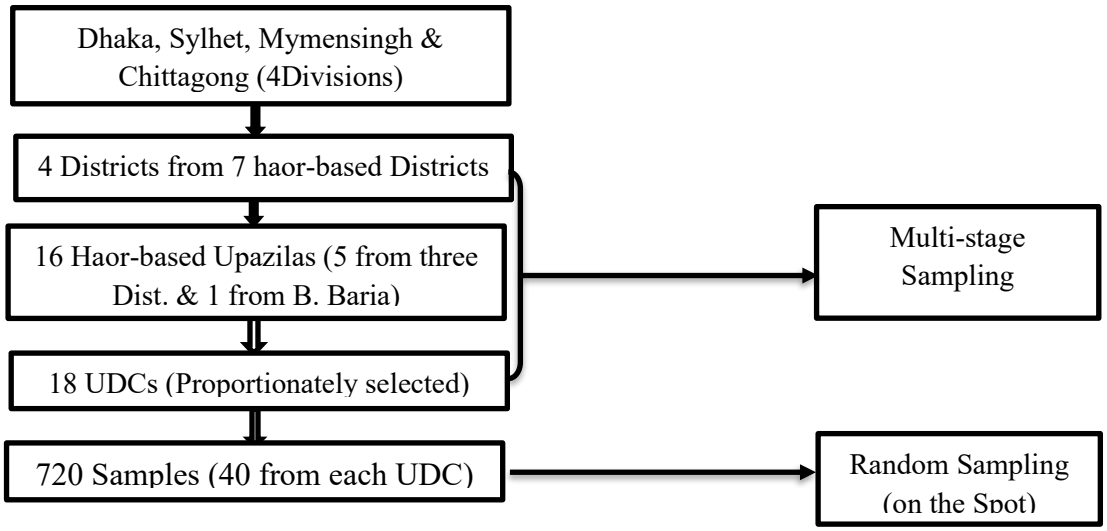



Figure 3: Sample selection procedure

Table 2: Distribution of sampled UDCs in the studied area

| Division | Districts | Haor Based Upazilas | Number of UPs | Number of Sampled UDCs | Selection Process |
|---|---|---|---|---|---|
| **Sylhet** | Sunamganj | 05 | 37 | 05 | Random Sampling |
| **Dhaka** | Kishoreganj | 05 | 37 | 05 | Random Sampling |
| **Mymensingh** | Netrakona | 05 | 42 | 06 | Random Sampling |
| **Chottragram** | Brahmanbaria | 01 | 13 | 02 | Random Sampling |
| **Grand Total** | | 16 | 129 | 18 | |

### *3.8.1 Sample Size and Sampling Plan:*

This study employs the following formula (Cochran, 1977) to calculate the sample size for the questionnaire survey:

$$n = \frac{p(1-p)z^2}{e^2} \times Deff$$

In this context, p represents the indicator percentage, which denotes the percentage of the population proportion or respondents receiving UDC-provided services in the haor regions of Bangladesh. Z signifies the normal variate value corresponding to a 99% confidence interval. The variable e indicates the relative error margin, while Deff refers to the assumed design effect applicable to multi-stage sampling. The analysis indicated that a minimum of 643 beneficiaries of Union digital services is necessary, based on a 50% indicator percentage, a 99% confidence interval, a relative precision of 0.05, and a design effect of 1.5. The idealistic approach, as outlined by Maxwell and Caldwell (2008), indicates an increase in the number of respondents from 643 to 720. Table 3 provides a detailed calculation and distribution list of the sampled UDC and the number of respondents for the questionnaire survey.

Table 3: The distribution list of sampled UDC and number of respondents for questionnaire survey

| Division | District | Upazila (Sub-district) | Name of Sampled UDC | Number of Respondents |
|---|---|---|---|---|
| **Chattogram** | **Brahmanbaria** | Nasirnagar | Chatalpar | 40 |
| | | | Goalnagar | 40 |
| **Sylhet** | **Sunamganj** | Tahirpur | Tahirpur Sadar | 40 |
| | | Shantiganj (Southsunamganj) | Jaykalas | 40 |
| | | Dharampasha | Joysree | 40 |
| | | Jagannathpur | Kolkolia | 40 |
| | | Derai | Rajanagar | 40 |
| **Mymensingh** | **Netrakona** | Mahanganj | Tetulia | 40 |
| | | Atpara | Sukhari | 40 |
| | | Khaliajuri | Nogor | 40 |
| | | | Krishnapur | 40 |
| | | Madan | Kytail | 40 |

| | | | | |
|---|---|---|---|---|
| | | Kalmakanda | Koilati | 40 |
| **Dhaka** | **Kishoreganj** | Itna | Raytoti | 40 |
| | | Austragram | Purbo Austragram | 40 |
| | | Mithamoin | Katkhal | 40 |
| | | Bajitpur | Dighirpar | 40 |
| | | Nikli | Nikli Sadar | 40 |
| **Grand Total** | | | | 720 |

Source: Author, 2023

Here, the service recipients of UDC have been considered as respondents for the questionnaire survey. It has been assumed that users of UDCs must be members of the respective Union Parishad in the locality. Thus, the sample size of service recipients for this study was 720, taking 40 respondents (male and female ratios would be equal) randomly from each UDC. This research involved men because it is necessary to learn about male perceptions of female involvement in UDC services. In addition, data from women has been compared to data from men.

Table 4: The distribution list of participants for IDI and FGD

| | **Stakeholders** | **Quantity** |
|---|---|---|
| **IDI** | ICT Expert | 01 |
| | DC/DDLG/ADC/UNO | 20 |
| | Women Affairs Officer | 13 |
| | Civil Society Members | 04 |
| | UDC Entrepreneurs | 23 |
| | UP Chairmen | 18 |
| **FGD** | Community Based Organizations (CBOs) or Women users | 16 |
| | Grand Total | 95 |

Source: Author, 2023

Likewise, for qualitative data this study selected ICT expert, DC/DDLG/ADC education and ICT/UNO, Women Affairs Officers, civil society members, UP chairmen, and UDC entrepreneurs from the selected UDCs through purposive or judgmental sampling. Primary

data was received from the eighteen UDCs in the four haor districts across the country. Among them, primary data was collected from five UDCs, particularly Derai, Shantiganj (Dakkhin Sunamganj), Jagannathpur, Tahirpur, and Dharamapasha Upazilas in Sunamganj district under the Sylhet division. Similarly, five UDCs were selected for the collection of primary data from the different upazilas, particularly Itna, Mithamain, Austragram, Nikli, and Bajitpur in Kishoreganj district under Dhaka division. Likewise, five UDCs were chosen to gather primary data from the Mahanganj, Khaliajuri, Kalmakanda, Madan, and Atpara Upazilas in Netrakona district under Mymensingh division. Two UDCs came from the Nasirnagar Upazila in Brahmanbaria district, under the Chattogram division.

### 3.9 Data processing and analysis

Quantitative data was collected via a questionnaire survey that included both structured and semi-structured formats. The survey was conducted through face-to-face interviews. Upon completion of the survey, the data underwent editing and coding and was subsequently entered into the Statistical Package for Social Sciences (SPSS) software. After completing data entry and data cleaning, input the variable name, the number of variables in the value cell, and the selected measurement scale into the level cell. Upon completion of data processing, the study employed various statistical analyses, specifically focusing on descriptive analysis, which encompassed frequency distribution, percentiles, and crosstab analysis of the respondents. The research employed inferential statistical analysis methods, specifically using the chi-square test for assessing the relationship between different union digital services and their effect on women. This study also employed binary logistic regression analysis. The logistic regression analysis model was utilised on the gathered quantitative data, enabling the study to forecast the effect of union digital services (independent variables) on women in haor regions (the dependent variable or outcome variable). Similarly, Qualitative data was collected through in-depth interviews and focus group discussions. Upon completion of data collection, the researcher proceeded to translate and edit all recordings from interviews and focus group discussions. The subsequent step involved familiarisation with the collected data, followed by categorisation, coding, and ultimately the preparation of a code book. The subsequent phase involves the formulation of subthemes and themes derived from the codebook. Thematic analysis is an inductive method for data analysis that entails the generation of themes derived from the collected data. The

research questions and objectives have been effectively addressed. The subsequent figure 4 outlines the procedures involved in data processing and analysis.

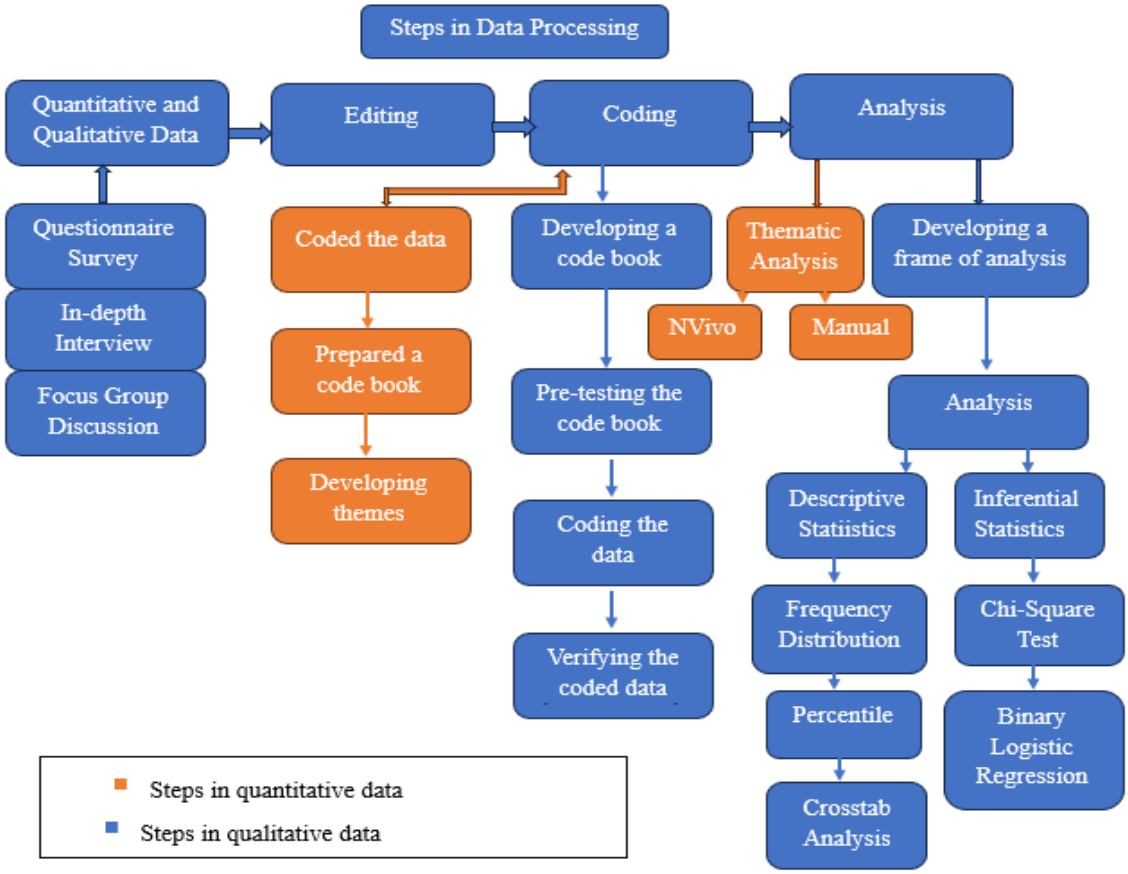



Figure 4: Steps in data processing in this study.

### 3.10 Reliability test

A variable or a set of variables that consistently measures what it is intended to measure is classified as reliable. Cronbach's alpha reliability tests are employed to evaluate the distribution of union digital services and their effects on women.

### 3.11 Validity test

The ability of a scale or measuring instrument to accurately assess the specific construct it intends to measure is known as validity (Zikmund, 2003). Three techniques were employed to evaluate the validity of a scale: face validity (or content validity), criterion validity, and construct validity. The determination of whether the proposed measure accurately assesses

the intended construct is established through the evaluation of face or content validity. Construct validity assists in determining the validity of the proposed construct and the accuracy of the measurement employed. This study utilised both content and construct validity in its methodology.

### 3.12. Ethical consideration

This study effectively addressed values and ethical issues, which are essential in social research. The analysis of data in this study is conducted with the utmost objectivity. The subsequent ethical considerations for social science research that were adhered to are as follows:

**Secrecy**: The study has maintained full confidentiality, as this is a crucial requirement for ensuring the legitimacy of the research.

**Honesty**: It is essential for accurately reporting and analysing data. This ensures that the respondents' perceptions are captured precisely, preventing any discrepancies that may misrepresent their responses. Consequently, honesty has been upheld consistently during the research process and data evaluation.

**Informed consent**: It is essential to provide respondents with information regarding the research problem and to acknowledge their contributions to the study with appreciation. The research has been communicated to them, including its motivations and the importance of their participation.

### 3.13 Summary of the chapter

This chapter outlines the research methodologies employed in the study. The research methodologies encompass the following components: research philosophy, approach, methods, sampling design, data collection methods and tools, data analysis procedures, and a description of the study area along with its justification. This research adhered to the principles of pragmatism as its guiding philosophy. The survey employed quantitative data, indicating a mixed research approach and utilised simple random sampling, as both quantitative and qualitative data were incorporated in this study. Focus Group Discussions (FGDs) and interviews were employed to gather qualitative data, subsequently utilising purposive sampling to include informed citizens. The survey questionnaire consisted of

structured, semi-structured, and open-ended questions. An interview checklist is used for conducting in-depth interviews, while a focus group discussion (FGD) guideline is employed to facilitate FGDs with women, service seekers, and community-based organisations in the areas under study. Quantitative data were analysed using frequency distribution, crosstab analysis, chi-square tests, and binary logistic regression. Qualitative data analysis encompasses the processes of data transcription, editing, coding, and the development of themes.

# CHAPTER FOUR
# THEORETICAL DISCUSSION

## 4.0 Introduction

This chapter primarily concentrates on theoretical discourse and the establishment of a conceptual framework for the analysis of study findings. Additionally, foundational research is necessary to explore pertinent theories that support the analysis of research activities. The study, informed by a literature review, identified multiple approaches, such as new public management, public-private partnerships, and inclusive governance. The theories offered a rationale for the preceding studies. The objective of this study is to identify effective methods for the dissemination of union digital services and analyse their impacts on women in the Haor region. The research field has been determined to be UDCs. Simultaneously, the PPP model enabled the formation of UDCs. The objective of UDC was to close the digital gap between urban and rural populations. The advantages of digitising public services are that they are accessible to citizens right at their doorsteps. The NPM model holds significance regarding customer sensitivity. In a similar manner, inclusive governance holds greater significance in the development of a conceptual framework. This model is comprehensive and serves each individual within the community. The initiative encompasses the involvement of policymakers and implementation bodies, engages all stakeholders, guarantees equal access and opportunities for individuals, empowers citizens, develops suitable solutions, and establishes robust connections with political actors.

## 4.1 Inclusive governance

Discussions on governance and development now consistently include "inclusion" (Menocal, 2020a). It is a fundamental principle of democratic administration. It involves equal participation, equal treatment, and equal rights under the law. Positive development results depend on inclusive development strategies. All people have the right to actively participate in government processes and have a say in choices that impact them, including the poor, women, members of minority racial and religious groups, indigenous peoples, and other disadvantaged groups (Pokharel and Pradhan, 2020). "Inclusion" also refers to governing structures and practices that are open to, responsive to, and responsible for vulnerable and marginalised groups, safeguarding their rights, and ensuring that all people have equitable access to public services, including justice, health, and education (Dias and Sudarshan, 2007). Studies on inclusive governance place a strong emphasis on how socially excluded people

exercise and enjoy their citizenship rights, as well as how they deal with obstacles to doing so. Inclusionary governance is conceptualised by the Organisation for Economic Cooperation and Development (OECD) in terms of fairness, equality, justice, and social cohesion. Giving individuals the opportunity to speak up and have an impact on the processes that matter to them is at the core of inclusive governance's significant intrinsic value. Additionally, it can serve as a foundation for developing a shared identity and shared values, which, in turn, can enhance social cohesiveness. The creation of inclusive nations and societies has come to be generally recognised as a key problem for international development with the introduction of the 2030 Agenda and its Sustainable Development Goals (SDGs). History demonstrates that inclusive nations and communities are more successful, resilient, and affluent (Guillaume and Shinwell, 2020). International development places a high priority on inclusion in terms of both processes (how decisions are made and who is involved in them) and results (how wealth and prosperity are distributed and shared across a population), with the SDGs serving as perhaps the most ambitious expression of this goal (Ibid., 2020). The following figure 5 illustrates the detailed aspects of inclusive governance.




Figure 5: Making Governance Inclusive

Similarly, it signifies a normative approach that prioritises inclusivity as a standard for evaluating and motivating institutions (Hickey, 2015). Inclusion as a process and the impact it has on development outcomes are hot topics in current discussions about governance and development. It is necessary for long-term development to be sustainable. To promote inclusive governance, it is necessary to have a solid understanding of national and subnational governance challenges, as well as local power and conflict dynamics. No state

will fulfil its social and economic goals without good and inclusive governance. To ensure an efficient and inclusive governance system, each country must reflect on its particular governance difficulties and engage in a meaningful national discourse on institutional improvements. Accountability, which entails being responsible for one's decisions, actions, and behaviours toward other people, is one of the components of inclusive governance. Responsiveness means responding to people and their needs with empathy, courtesy, and proactivity. Gender equality refers to the fact that men and women have the same rights, responsibilities, and opportunities, and "social inclusion" refers to enhancing the ability, opportunity, and dignity of people who have been marginalised because of their identity.

The establishment of the Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development by the United Nations involved a commitment from its member states to ensure inclusivity and equity, as encapsulated in the pledge to "leave no one behind". The Inclusive Governance initiative is a regional programme designed to support nations in Sub-Saharan Africa in enhancing accountability and inclusivity for their entire populations. This includes addressing the needs of sexual and gender minorities, who often face stigma and disenfranchisement. Establishments, practices, procedures, and offerings that effectively serve and engage all individuals, consider women and various aspects of identity, and are accessible, accountable, and responsive to all members of society are available, answerable, and attentive to all demographic groups. Inclusive administration plays a critical role in promoting democratic principles, including tolerant coexistence, respect for diversity, civil rights, and equitable treatment under the law. IG denotes a governmental framework and associated behaviours that integrate marginalised individuals within the comprehensive structure of governance policies, programmes, processes, and practices. IG encompasses structural, policy, and various reforms; it defines our actions as public servants and our connections with others. The absence of democratic and inclusive governance systems will likely hinder the return of peace and stability, which are critical to supporting entrepreneurial activity and wealth development in these nations. IG looks at who is involved in making decisions, how they make them, and why they do it that way; it studies which groups have more or less power in these processes and why that is, and it also explores how these relationships and interactions affect the decisions made, their quality, and how they are carried out. Inclusive governance encompasses the participation of all stakeholders, empowers individuals, facilitates dialogue among key groups, develops improved solutions, guarantees equal access and opportunities for all, and links policymakers with political

parties. These represent various examples of inclusive governance as outlined by Hussain et al. (2013).

IG decreases inequality and social tension, includes the poor and disadvantaged's talent, productivity, and social and physical capital, and improves local ownership of development processes and initiatives (Khan, 2009). Representatives from all relevant actors and groups must be involved in inclusive governance. All actors must be able to participate actively and constructively in the discourse. There must be a common understanding about how the problem is framed, possible solutions, and their likely outcomes. There must be a decision-making forum that gives all parties equal and fair chances to voice their opinion and express their preference. There must be a link between the participatory bodies of decision-making and the political implementation level (Rem, 2008).

### 4.2 Core principles of inclusive governance

People have grown more aware of their potential and rewards in the modern environment. They are able to distinguish between rules under various regimes. In this scenario, the government is committed to enhancing the quality of public service delivery for the entire country. Additionally, by establishing inclusive governance, it is possible to advance and defend human rights, increase people’s participation, ensure that all people have access to public services, aim for more inclusive development outcomes, promote wealth and shared happiness, and achieve shared wealth in a reasonable amount of time. In this situation, inclusive governance provides various benefits to citizens, as shown in the figure 6 below.

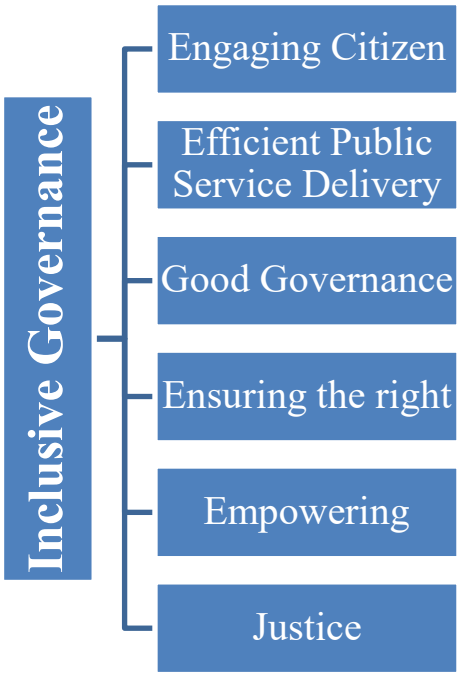



Figure 6: Principles of inclusive governance

### 4.2.1 Engaging citizens

Participation encompasses the act of engaging in an activity as well as the connections established through that engagement (Islam, 2014). The way people get involved is a structured process where every day, isolated, poor, and powerless groups gain important control over development projects meant to help them. Certain scholars propose that stakeholder engagement takes place when individuals function as consumers or stakeholders, consistent with the traditional governance framework (Ibid., 2014). Inclusive governance necessitates the assurance of public engagement in decision-making and policy execution, alongside the accountability of incumbents involved throughout the entire process (Khan and Islam, 2020).

### 4.2.2 Efficient public service delivery

Public services are both necessary and indispensable in society. Because it touches the lives of millions of people, public service delivery is one of the most significant and vital parts of good governance. The government guarantees that public services are always available and that all charges are affordable to everyone. It means that citizens must have access to services (Bava, 2008). Citizen-centricity is vital for any government—local, state, or national—that seeks to deliver excellent governance (Mokta, 2013). In some way, public service delivery

influences the lives of practically every person in a country, either directly or indirectly. It also impacts a citizen's complete lifespan, from birth to death (Raichaudhari and Jain, 2007).

### 4.2.3 Governance and good governance

The term "governance" is a century-old concept by which rulers have been governing the state. Before going to explain inclusive governance, the study must clearly understand governance, then good governance will come ahead, and finally, inclusive governance will be described. The word "governance" refers to the methods of managing different public organisations in a state. The term "governance" was derived from the Ancient Greek phrase "kuberna", which meant "to guide", as per the Oxford Dictionary. The first standard political science article on the same subject (Kamal, 2013) discusses the notion of government, which places the rule of law at the heart of progress.

The notion of governance has existed since the inception of human civilisation, and its interpretation varies among individuals. Governance may be defined as the execution of or failure to execute decision-making procedures (Islam, 2017). Governance encompasses more than just government functions. It describes the ways civilised society, the state, enterprises, and all other organisations and entities conduct their affairs; the system must work throughout all stages, from local to national to continental and worldwide. Governance is concerned with how people are ruled, how state operations are managed and controlled, the political organisation of a country, and how it functions in relation to public administration and law. It describes the use of political power to govern a country's affairs (IBRD, 1992; Landell-Mills and Serageldin, 1991). Governance, on the other hand, refers to the process of making decisions as well as the system by which they are carried out or not (Rahman, 2018). Smith (2007) defines governance as government plus the private and third sectors. The government is one of the most important actors in governance. Other governance players vary according to the local government level (Rahman, 2018). Governance may be described as how people are ruled and how a state's actions are handled and regulated, according to Landell-Mills and Serageldin. It relates to a nation's political system and how it works in connection with public administration and legislation (Khan, 1996). The World Bank defines governance as the process through which a country's economic, political, and social institutions exercise power (Tarverdi et al., 2019). The term includes (1) government choice, oversight, and replacing; (2) the government's capacity to formulate and implement suitable

policies; and (3) people's and the nation's respect for such establishments that regulate socioeconomic ties between them (Kaufman and colleagues, 1999).

Because the notion of ‘government’ predates human civilisation, it has multiple connotations for different people. Simply put, “governance’ refers to the process of making decisions. Polity is the exercise of political, economic, and administrative authority to manage a nation's affairs, as well as the understanding of the factors, procedures, connections, and power structures that people and communities use to communicate their preferences, exercise their legal rights and responsibilities, and intervene in their disagreements (UNDP, 2022). According to the ADB (1995), ‘government’ is defined as ‘the exercise of power in the administration of a country's economic and social resources for development.’ The concept of ‘governance’ in this context refers to the direct control of the development cycle, which involves both stakeholders. It encompasses operations and capabilities from both the public and private sectors, as well as the laws and institutions that establish the framework for government and non-government business activities, including industries, businesses, and markets, which are essential for meeting legal requirements and achieving success in collaborations. Governance, in general, refers to the governance environment wherein individuals engage with one another as well as with public agencies and authorities (ADB, 1995). Governance is the framework through which nations or institutions settle on choices, determine who should be included in them, and renegotiate those decisions (Sheng, 2009). In actuality, governance encompasses each entity and body in a community, from the home to the kingdom, as well as all methods used by societies to transfer authority and allocate resources and concerns, both positive and negative.

The British Council's conception, on the other hand, emphasises that "governance" is a broader concept than "government" (as well as relevant concepts like "country," "democratic governance," and "government" and continues, "The relationship between official institutions and civil society is fundamental to governance." The process through which members of society use their power, authority, and influence to enact policies and choices that seriously affect life and societal advancement is referred to as "governance" (The British Council, 1991). The term all processes of governing, whether undertaken by a government, market, or network, whether over a family, tribe, formal or informal organisation, or territory, and whether through laws, norms, power, or language, refers to all governance processes, regardless of whether they take place over a family, tribe, formal or informal organisation, or

territory (Bevir, 2013). This concept focusses on the interactions and decision-making processes among the participants involved in a collective problem, which contribute to establishing, reinforcing, or replicating social norms and institutions (Hufty, 2011).

Economic, political, and administrative governance are considered to have three legs. Economic governance refers to the methods through which a republic's economic activity and interactions with other markets are governed. Policy formation is part of political government, whereas policy execution is part of administrative governance. This and other definitions used by international development organisations show that the term "governance" is all-encompassing. It permeates all sectors and blurs the boundaries between governance, policymaking, and policy execution (Hyden and Court, 2002). It looks like a complex and often ambiguous notion, yet it encompasses every aspect of human endeavor— whether constitutional, cultural, economic, political, or social, in its numerous forms. It is different from government because government is the official use of legal power to help society function and continue, supported by laws, procedures, and standards. As a result, given its frequently informal nature and engagement with formal government operations, the public standing accorded to governance is dynamic. It's about actors' capacity to perform in pursuit of goals and aspirations formed from dynamic interactions and power struggles among state and social actors, whatever those goals and ambitions may be (Fukuyama, 2013). As a result, governance is described as the creation and management of a set of rules that regulate the government, which would be the environment wherein government, business, and society interact to take actions.

Through organised public engagement, the idea of good governance carries the spirit of democratisation (Coulibaly, 2004). Common manifestations of civic engagement include knowledge, education, advocacy, inquiry, and conversation (UNDP, 2010). Good governance refers to an active and prominent government that works toward being the best supplier of government services. Good governance covers many governmental activities. It is concerned with various state policies, public-private partnerships, reforms, the corruption system, the democratic process, projects involving donor assistance, and so on. GG prevails in an ideal state of governance, which works for several types of development across a country, including economic, cultural, political, social, and other types of development. It ensures people's participation, equality of law, and an accountable governance system that is more transparent and accountable. The World Bank identifies six characteristics of GG when

defining it: A well-managed government service is crucial for enforcing contracts, and a distinct court system and regulatory process are essential. Transparent governance of public expenditures requires an impartial government auditor accountable to a governing authority, and all branches of administration must support humanitarian law and a free press (WB, 2011). The GG is an important element of the worldwide struggle to alleviate poverty. The GG is fundamentally dependent on human rights. A multitude of organisations influence the actions of public entities, inspire awareness, foster government involvement, and control public-private relations (Villadsen, 1999).

### 4.2.4 Ensuring rights

Human rights are rights that all individuals have, regardless of their nationality, place of residence, gender, national or ethnic origin, colour, religion, language, or any other status. They include both rights and responsibilities (Hussain and Hussain, 2022). Jones (2005) offered a rights-based strategy for broadening the inclusive political space in policymaking and public service delivery (Jones, 2005; Singh et al., 2009). This approach places an emphasis on three aspects of the GG agenda: equality and non-discrimination, inclusion and participation, and openness and accountability. The UNDP (2007) views these as inalienable rights that are essential to development and have inherent worth in achieving more equitable results.

### 4.2.5 Empowering

Empowerment is a concept that focuses on improving institutional capability and removing factors that lead to powerlessness. It is particularly useful for vulnerable populations, such as women and people, and helps them deal with events and take control of problems (Islam, 2014). Empowered individuals experience a sense of self-determination, meaning, competence, and effect (Quinn and Spreitzer, 2001). It is a systematic process that enables individuals and communities to become self-sufficient by articulating concerns, understanding needs, and maximising their internal potential to solve issues (Balassiano and Maldonado, 2014; Van der Grijp et al., 2019). It also involves making citizens change agents for themselves and their communities (Gilman, 2016).

### 4.2.6 Justice

Access to resources, public goods, and services is a basic human right, and equity is critical for growth (Singh et al., 2009; Misra, 2017). Social accountability systems can provide equal access to public services by allowing marginalised populations to express their concerns to government and public institutions (Rahman, 2017). A more complicated judicial system is required to ensure fairness, maintain diversity and operational inclusion, and protect minorities, the poor, and the excluded (Hoque, 2017; Koepke and Robinson, 2018). This necessitates expanded public access to the judicial system as well as the legal system's capacity to enforce standards and encourage participation in the legislative and executive branches.

## 4.3 Different types of inclusion

For inclusive governance, there are two types of inclusion systems.

### 4.3.1 Process-based inclusion

Process-based inclusion refers to how decisions are made, including who is involved, how they are included, the viewpoints that are considered, and how these factors affect the quality of the decisions and their implementation (Joshi, Hughes, and Sisk, 2015). Individuals from various demographics, including women, youth, racial and ethnic minorities, religious groups, persons with disabilities, and transient or migrant populations who have historically faced exclusion or marginalisation, are now positioned to engage more actively in political processes and enhance their influence in holding governmental authorities accountable (Fuentes and Cookson, 2018).

### 4.3.2 Outcome-based inclusion

Outcome-based inclusion addresses challenges related to distributional equity. Various methods disseminate or share key developmental benefits such as growth, infrastructure, nutrition, schooling, water and sewage, social welfare, fairness, and security. Outcome-based inclusion examines the beneficiaries of prosperity, the reasons behind their benefits, and the degree to which they are affected. Certain players consider inclusive governance to be a valuable asset in its own right. Some adopt a pragmatic perspective, viewing inclusive governance to attain inclusive development outcomes rather than an objective in its own right.

### 4.4 Perspectives on inclusive governance

Certain players consider inclusive governance to be an intrinsic value. Some adopt a pragmatic perspective, viewing inclusive governance as a means to attain inclusive development outcomes rather than as an objective in its own right. This note asserts that both intrinsic and instrumental approaches to inclusive governance are essential and valuable.

#### 4.4.1 Governance that is inclusive is a source of inherent value

Individuals possess a voice and fundamental freedoms within inclusive decision-making processes, enabling them to pursue their values and seek redress in instances of perceived injustice (Stiglitz, Sen, and Fitoussi, 2009). Furthermore, citizens can anticipate that policy decisions will be made through inclusive processes that engage all stakeholders, facilitate participation from diverse groups, maintain transparency, and ensure accountability among decision-makers. This belief is supported by the rights and freedoms associated with inclusive practices, including the right to political expression, the freedom to assemble, a free press, access to information, and the opportunity to engage in political decision-making (Menocal, 2012). Inclusive governance seeks to enhance citizen participation and agency while simultaneously ensuring improved rights and protections for marginalised groups.

#### 4.4.2 Inclusive governance as a tool for sustainable development

This indicates that achieving more inclusive development outcomes necessitates the implementation of inclusive governance. The theoretical discussion supporting these global obligations is relatively persuasive. Enhancing citizens' role in governance processes, encompassing both participation and expressions of stimulus, is expected to render civic institutions more attuned to the needs and demands of citizens, especially those from historically marginalised and excluded groups (Carothers and Brechenmacher, 2014).

### 4.5 Good Governance and Inclusive Governance

The notion of good governance encapsulates the idea that individuals worldwide would experience significant improvements if political systems and decision-making processes were founded on principles of fairness, justice, transparency, accountability, and inclusivity (Grindle, 2010). The promotion of participation and the establishment of formal institutions grounded in blueprints, best practices, and normative objectives regarding the process of change are critical components of effective governance. The good governance agenda encompasses inclusive governance as a characteristic; however, the scope of the agenda is significantly broader.

### 4.5.1 Governance based on human rights and inclusive governance

Inclusive governance is at the core of the Human Rights-Based Approach (HRBA), which has received support from a number of significant international development actors. HRBA emphasises three aspects of good governance: equality and nondiscrimination, inclusion and involvement, and openness and accountability. The cornerstone of the rights-based approach is inclusive governance, which involves the administration of social, political, and economic institutions for human development (UNDP, 2015).

### 4.5.2 Legitimacy and inclusive governance

Legitimacy denotes the perception among key political figures and the broader populace that the standards regulating the use of authority and the allocation of resources are suitable and obligatory. The key aspects of legitimacy, especially process-based legitimacy, are intrinsically connected to IG. The concept is associated with legitimacy derived from ideas and ideology, as beliefs influence individuals' perceptions and behaviours concerning participation in political processes, determining who is included and who is excluded, and the rationale behind these decisions. The concept is associated with clientelism, which involves the selective inclusion, representation, and influence of specific groups in exchange for political loyalty.

### 4.5.3 Social cohesion and inclusive governance

The kinds of relationships and features that bind members of a social group to one another and to the group as a whole, as well as how these groupings operate and work together, are referred to as 'social cohesiveness' (Kaplan and Freeman, 2015). Fundamentally, inclusion aims to foster social cohesiveness and strengthen the bonds that bind a community together. Exclusion reduces trust and prevents collaborative action across groups due to the many dynamics it creates (Berkman, 2008). As a result, the state and various groups in society lose the glue that binds them all together.

## 4.6 Technology Acceptance Model

Many researchers have used the Technology Acceptance Model (TAM) to predict how users will accept interactive technology in information system (IS) studies (Aziz et al., 2020). The research employs the TAM as its foundational theory. In 1989, Fred Davies introduced the Technology Acceptance Model (Olalekan et al., 2017). TAM highlights the acceptability of an information system. The theoretical model of TAM is developed on the foundations of the theories of reasoned action (TRA) and planned behaviour (TPB), as established by King and

He (2006) and Marangunic and Granic (2015). To achieve a comprehensive understanding of TAM, it is essential to examine its historical evolution, as illustrated in the following figure.

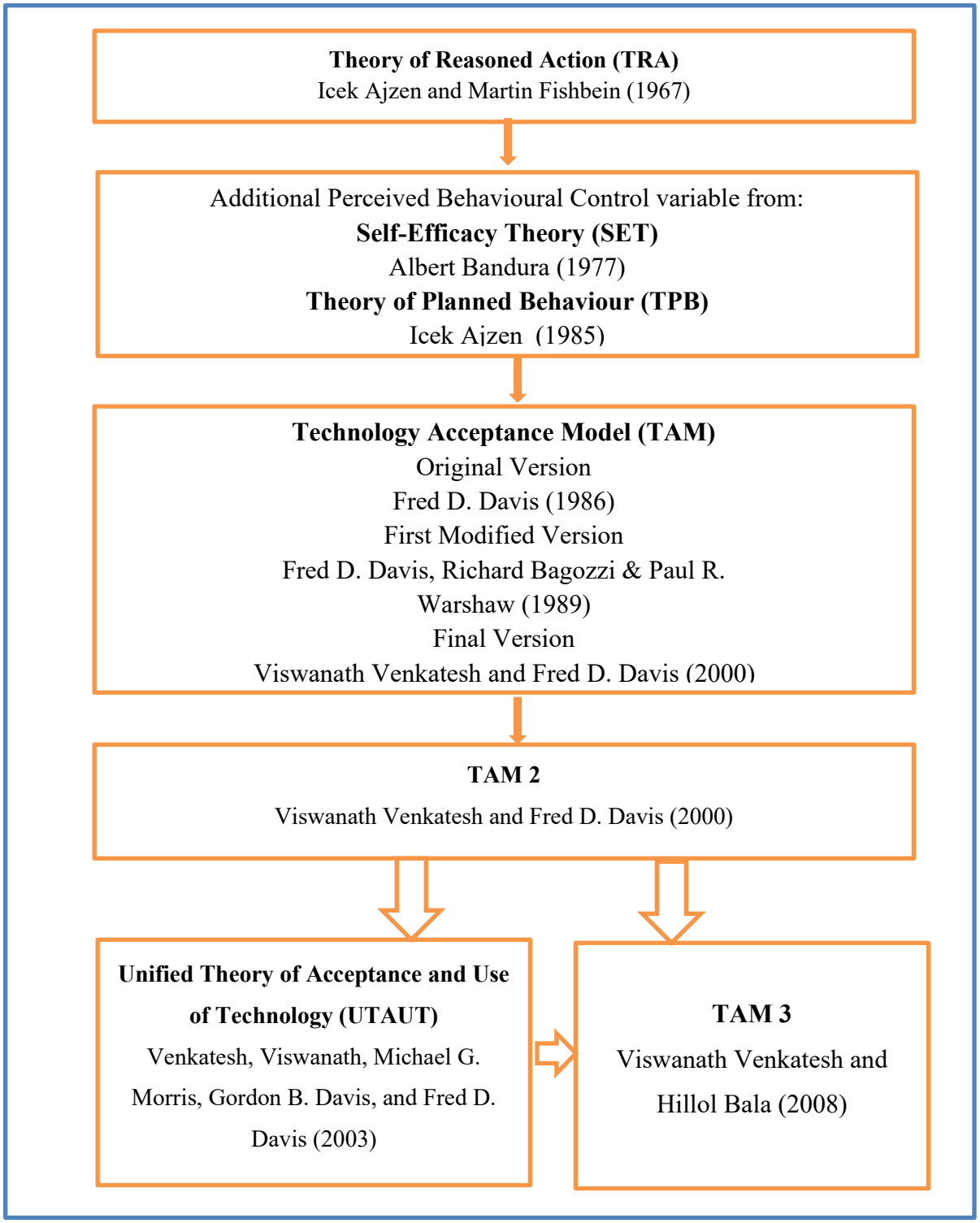



Figure 7: The development of Technology Acceptance Model

This model's goal is to forecast a tool's acceptability and pinpoint the system improvements that must be made in order for the tool to be accepted by users (Okunnu, G. et al., 2020). According to this theory, perceived usefulness and perceived usability are the two key elements that decide whether an information system is considered acceptable (Venkatesh et al., 2003). According to TAM, an individual's purpose serves as a mediator between user satisfaction and performance expectancy, which in turn determines real system use. The simplicity of usage is also seen to have a direct bearing on perceived utility (Op. cit., 2003).

The original Theory of Reasoned Action is clearly differentiated from the Technology Acceptance Model. The model introduced two additional constructs: effectiveness and relative advantage of use. The variations are categorised into two groups. The second construct, perceived ease of use, posits that employing an application will alleviate stress in the workplace. In contrast, the first construct, perceived usefulness, asserts that employing an application will enhance performance (Shih, Shing, and Chien, 2011). Ducey (2013) conducted a study that elucidated the significance of the two components of the Technology Acceptance Model, highlighting their impact on user behaviour and technology adoption. The Technology Acceptance Model aims to elucidate the impact of different factors on the adoption of technology. This objective provides a comprehensive description of users' behaviour across a diverse demographic spectrum. The primary objective of TAM is to establish a framework for analysing the impact of external factors on internal attitudes, beliefs, and intentions within an organisation.

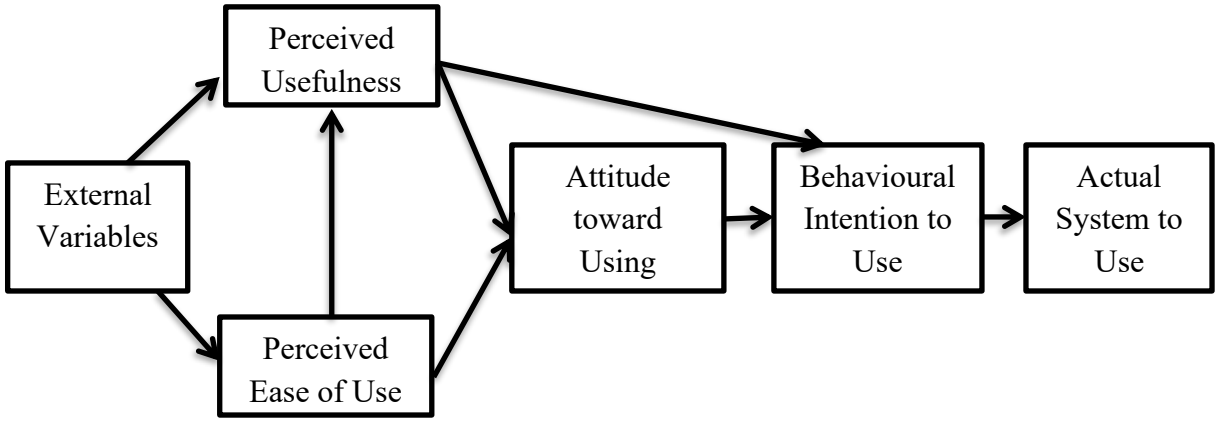



Figure 8**:** Technology Acceptance Model

Source: Alshammari, S. H. and Rosli, M. S. (2020).

The theory may be utilised to disseminate union digital services across the haor regions of the country. The TAM is important for developing a digital Bangladesh because it explains how

things like confidence in using technology, benefits of technology, available technology resources, electricity supply, and internet access help people accept digital governance. The TAM is preferred for implementation across different contexts due to its straightforwardness and predictive capability (Venkatesh, 2003). The TAM provides insights into the acceptance, application, relevance, and effectiveness of current technologies in enhancing citizen literacy and improving the delivery of public services. The application of TAM in this study highlights the technology usage and behaviour exhibited by the users (Olalekan, A. et al., 2017). The TAM is pertinent to the examination of the distribution of union digital services within the framework of e-governance and the delivery of public services in Bangladesh. This relevance is contingent upon the level of observation and the foundational assumptions associated with the TAM.

Table 5: Relationship between basic elements of theories, UDS and women

| Theory | Core Elements | Union Digital Services | Effect on Women |
|---|---|---|---|
| TAM | External Variables,<br>Perceived ease to Use,<br>Perceived Usefulness,<br>Attitude Toward Using,<br>Behavioral Intention to Use, and<br>Actual System to Use | Mode of dissemination of UDS<br>Skill and behaviour of entrepreneurs | Based on core constructs of TAM, female users accept or reject IT-based services in haor areas. |
| Inclusive Governance | Citizen engagement,<br>Public Service Delivery,<br>Good Governance,<br>Empowering,<br>Human Rights and Justice | Government services<br>Information Services<br>Commercial Services | Increase Awareness<br>Being Skilled<br>Employed<br>Equal Access to information and decision making<br>Empowered |

The TAM serves as a predictive instrument for assessing the acceptability of an information system and pinpointing required modifications. The two primary factors influencing this process are perceived usefulness and perceived ease of use (Venkatesh et al., 2003).

Perceived usefulness denotes the conviction that utilising an application will enhance performance. Conversely, perceived ease of use indicates that it will reduce work-related stress (Shih, Shing, and Chien, 2011). The elements discussed have a significant impact on technology and provide insights into users' behaviour across diverse populations. The TAM is relevant to the distribution of union digital services in the haor region, emphasising self-efficacy, perceived cost, technological infrastructure, power supply, and internet access. This analysis aids in understanding the acceptability, applicability, relevance, and efficacy of existing technologies for citizen information sharing, assessing literacy levels, and enhancing public and commercial service delivery (Venkatesh, 2003). The model is distinct from the original reasoned action model, incorporating two additional constructs: perceived usefulness and perceived ease of use. Ducey (2013) highlights the significance of understanding user behaviour across various demographics. The TAM serves as a framework for monitoring external factors that affect organisational attitudes, beliefs, and intentions while enhancing the usability of information systems. The TAM is essential for evaluating the acceptability, applicability, relevance, and efficacy of technologies utilised in citizen information sharing, assessing literacy levels, and enhancing public and commercial service delivery (Venkatesh, 2003). The distribution of union digital services in the haor region is relevant, especially regarding their impact on women.

### 4.7 Conceptual framework of the study

Inclusive governance, the technology acceptance model, and the Union Digital Centre are interconnected elements that contribute to efficient public service delivery, citizen engagement, good governance, individual empowerment, ensuring the rights and justice for all individuals. The UDC is an advancement in e-governance that connects marginalised individuals with government services through information and communication technology. UDC operates with local entrepreneurs using a public-private partnership model and employs ICT to facilitate inclusive governance. PPP is responsible for implementing inclusive governance. The TAM analyses user behaviour, focusing on utility and ease of use. The EU and AU influence usage attitudes and intentions, with the AU and BIU collectively affecting system usage. The TAM recognises the UDC system as a viable innovation in e-governance by providing services to grassroots individuals lacking digital literacy and access to digital devices. UDC supports vulnerable groups, such as women, in the Haor area, enabling IG to implement operations via UDC in Haor regions. The following figure shows detailed

relationships among inclusive governance, the union digital centre and the technology acceptance model.

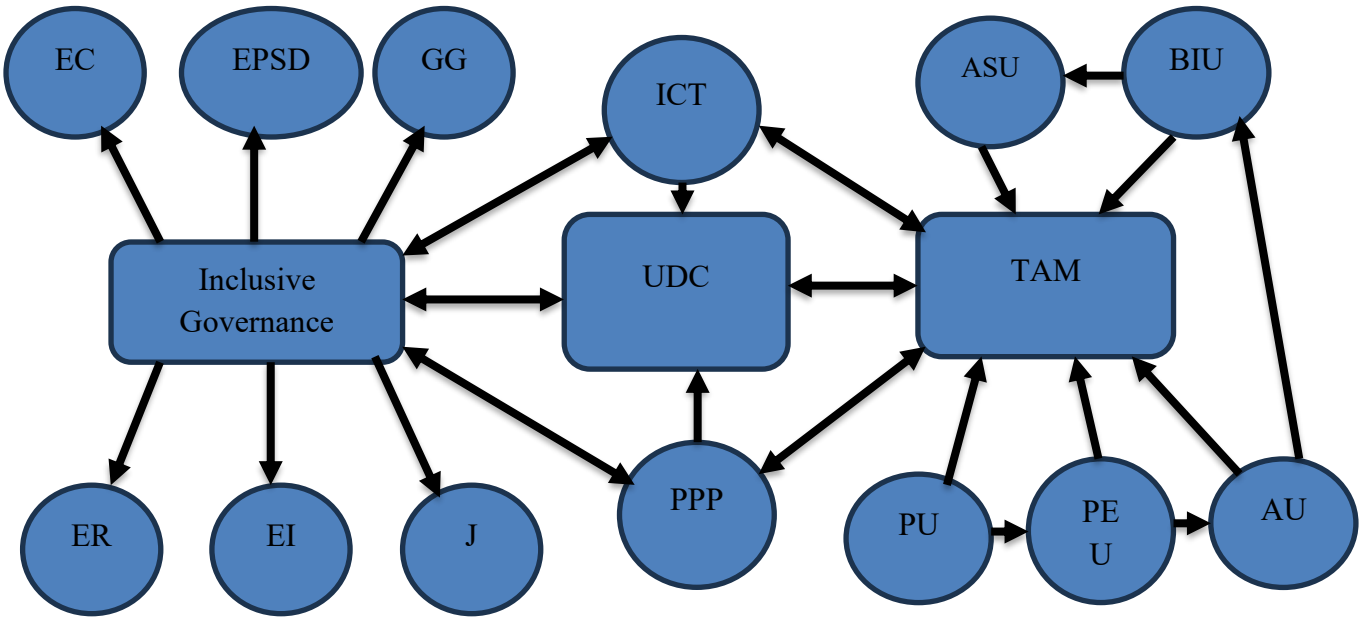



Figure 9**:** Conceptual framework of the study

Here, EC= Engaging Citizen, EPSD= Efficient Public Service Delivery, GG= Good Governance, ER= Ensuring the Right, EI= Empowering Individual, J= Justice. TAM= Technology Acceptance Model, PU=Perceived Usefulness, PEU=Perceived Ease of Use, AU= Attitude toward Using, BIU= Behavioural Intention to Use, ASU= Actual System to Use. UDC= Union Digital Centre, ICT= Information and Communication Technology, PPP= Public Private Partnership.

### 4.8 Analytical framework of the study

The figure below illustrates the analytical framework derived from a comprehensive review of the existing literature and a theoretical analysis of the variables involved. The following variables form the basis of this framework: The effect on women serves as the dependent variable, while the independent variables encompass union digital services, which consist of government, information, and commercial services; dissemination strategies of UDSs; equal access to services; and decision-making processes.

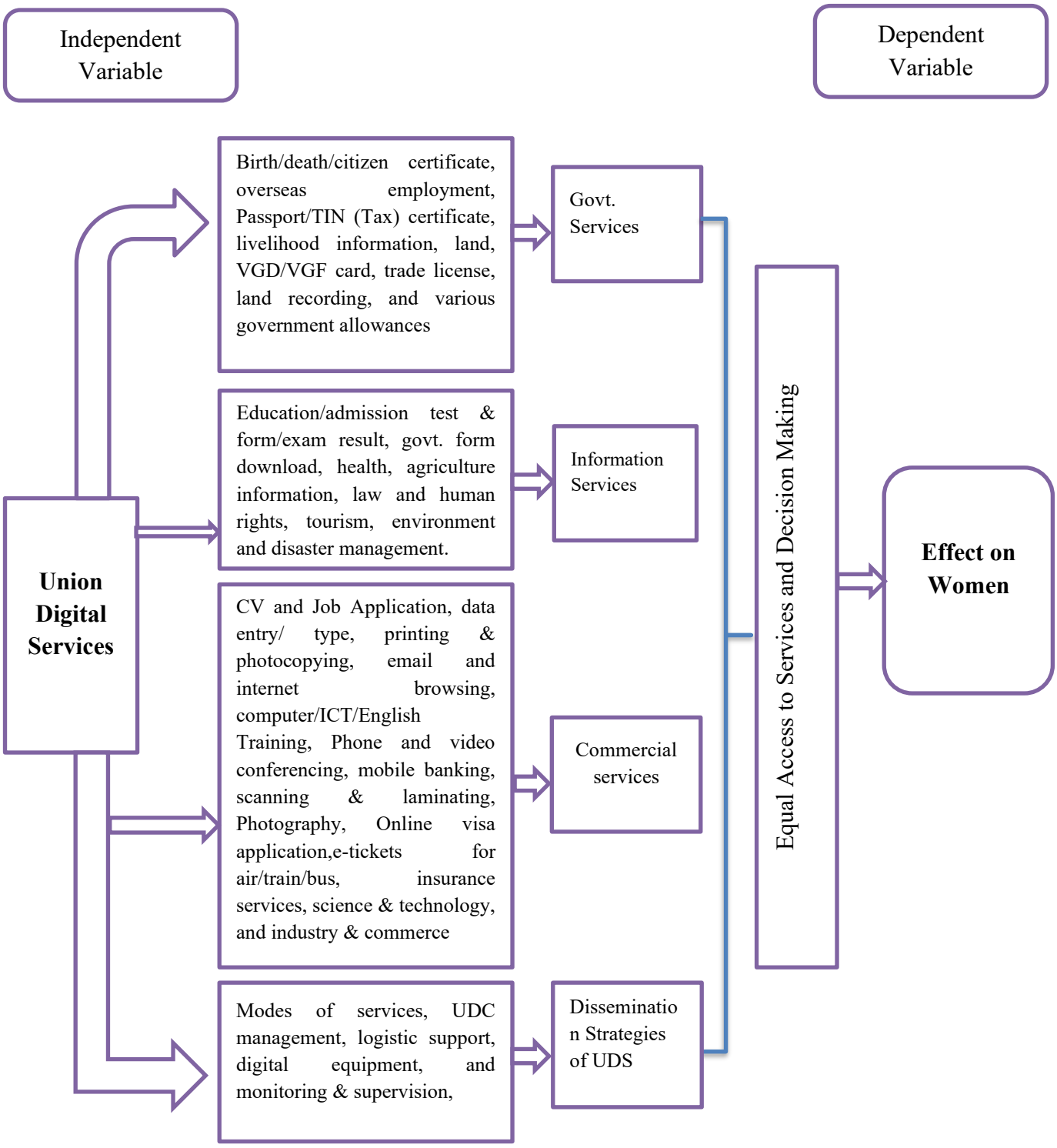



Figure 10: Analytical framework of the study

Source: Author, 2025

## 4.9 Operational definition of the variables

### 4.9.1 Union digital services

The Union Digital Centres, newly established as 'one-stop information and service delivery outlets', are situated at the lowest tier (union) of the local government of Bangladesh. Starting in 2010, the GOB has been able to establish such UDCs in almost every union to make information and services conveniently accessible to its remote, rural, and semi-urban communities (Rashid and Shafie, 2018). The Access to Information (a2i) Programme of the Prime Minister's Office took initiatives to set up these UDCs to leverage technology at local levels and to establish public and private service delivery points in every UP and district headquarters. At present, there are 4,565 UDCs in 64 districts in Bangladesh, and all these digital centres have now been turned into information hubs for rural communities, from which the rural people get easy access to various public information and services (A2I, 2017).

In August 2014, the Union Information and Service Centres (UISCs), the initial name of UISCs, underwent a rebranding as Union Digital Centres. UDCs are the hallmark achievements of Vision 2021. It represents service access innovation, and it is enabling rural communities to access government and commercial services as a result of innovations in ICT and mobile technology in service delivery (Bakshi and Rahman, 2016). The study selects 18 UDCs out of the 4547 Union Parishads (UP). The selected UDCs are located in the Tahirpur, Dharampasha, Shantiganj (South Sunamganj), Derai, Jagannathpur, Itna, Mitamain, Austragram, Bajitpur, Nikli, Khaliajuri, Madan, Mohanganj, Atpara, Kalmakanda, and Nasirnagar Upazilas in the Sunamganj, Kishoreganj, Netrakona, and Brahmanbaria districts. UDS denotes the services that UDCs in the four districts of the Haor area offer. These services are broadly divided into three categories: government, information, and commercial services.

#### 4.9.1.1 Government services

The government services present in the studied area are classified as independent variables. The independent variables comprise birth records, death records, citizen certificates, overseas employment information, passport information, TIN (tax) certificates, livelihood details, land ownership, a compilation of VGD and VGF cards, trade licences, land registration, and assorted government allowances.

#### 4.9.1.2 Information services

The information services accessible in the Haor area are classified as independent variables. The content encompasses information related to education, including admission tests and forms, the dissemination of public exam results, the availability of government form downloads, health services such as telemedicine and consultant listings, agricultural information, legal and human rights resources, and tourism insights, as well as environmental and disaster management topics.

#### 4.9.1.3 Commercial services

The commercial services offered by UDC in the Haor area are classified as independent variables. The tasks include CV and job application preparation; census data entry or typing; printing; photocopying; email communication; internet browsing; computer usage; ICT applications; English language training; phone calls; video conferencing; mobile banking; scanning documents; laminating materials; photography; online visa applications; e-ticket procurement for air, train, and bus travel; and insurance services, as well as activities related to science and technology and industry and commerce.

### 4.9.2 Dissemination strategies for UDC services

Union Digital Services' dissemination strategies focus on service delivery methods, oversight and evaluation of UDC activities, motivational programmes, technical resources, and infrastructure, among other elements. This study examines the efforts available in the haor-based UDCs.

### 4.9.3 Equal access to services

In general, equal access implies that everyone is of equal position or value. In this study, equitable access means equal rights to UDC services. On the other hand, everyone who resides in the Haor region is entitled to UDC services. There was no discrimination based on gender identification.

### 4.9.4 Decision-making

The process of decision-making involves the steps through which individuals determine the appropriate activities to undertake. The context may pertain to an individual's personal life,

family dynamics, community interactions, organisational structures, or governmental frameworks. This study defines decision-making in the context of entrepreneurs and service seekers residing in the Haor region.

### 4.9.5 Effect on women in haor regions

Since the initiation of this system, UDC has been delivering a range of services to the rural population of the country. Nearly ten years have elapsed since that time. This study primarily focuses on the conditions of women living in the wetland regions of the country. The changes in women's lives and livelihoods are notable, with an increase in the literacy rate among girls and women. There is a growing awareness of rights, participation in training programmes organised by UDC, and encouragement towards entrepreneurship and self-employment in the studied area.

## 4.10. Relation between the union digital centre and inclusive governance

Public service delivery builds the relationship between the government and its citizens. It is the frontline of governance. The government of Bangladesh was determined to modify the governance system, which is popularly known as "digital governance." It began in 2009, following the ninth parliamentary election. In other words, it is called electronic governance. Similarly, UDCs are operating at a rural level as an initiative of Digital Bangladesh. Likewise, underserved and marginalised people live there. Consequently, the establishment of UDCs aimed to provide public and private services at the grassroots level. Thus, UDC is also at the forefront of e-governance (ADB, 2013). It is obvious from the description of the objectives of UDCs (Haque and Mahiuddin, 2018). In addition, UDC is also known as a New Public Management tool (Shamrat and Hossain, 2022). Basically, UDC functions as a bridge to connect the government with rural and mass populations.




Figure 11: From governance to inclusive governance

The government has offered various services to citizens through multiple processes since the establishment of nation-states. That was referred to as governance. However, it did not meet the required standards. The OECD subsequently introduced the concept of good governance, which encompasses various principles such as accountability, transparency, human rights, rule of law, freedom of speech, and anti-corruption initiatives (Bundschuh-Rieseneder, 2008). Development scholars identified several discrepancies that impeded a country's economic growth. In this context, the OECD recommended an alternative framework for governance systems, referred to as inclusive governance. This includes citizen participation, the delivery of public services, the principles of good governance, empowerment initiatives, the protection of human rights, and the pursuit of justice. The government of the country has decided to implement a transformation of the governance system, referred to as digital governance or electronic governance. The government initiated various programmes at both the central and field levels for the implementation of e-governance. The UDC represented a key initiative designed to support rural communities, which constitute the majority of the population in Bangladesh. The initiative was initiated through a public-private partnership model designed to ensure active participation from the community. To mitigate gender-based disparity, both male and female entrepreneurs were selected from the qualified local community. UDC effectively delivers public services. The government can engage with citizens via the service

delivery provided by the UDC. The UDC pertains to digitalisation initiatives that support the execution of effective governance and the principles of inclusive governance. Similarly, the UDC functions as a platform for the residents of Haor, where the integration of technology plays a crucial role in determining its sustainability.

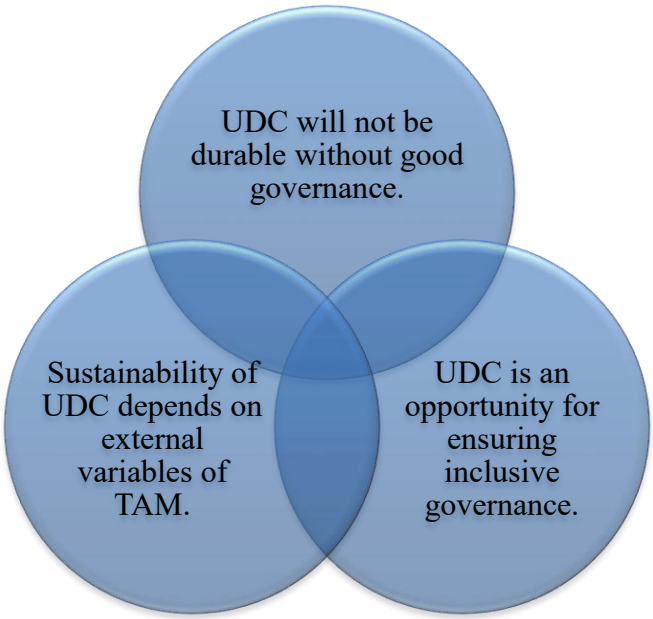



Figure 12: UDC aligns with TAM and IG.

Furthermore, rural residents gain awareness of the rights provided to them by the government. UDC functions as an information centre and provides income-generating opportunities. The programme offers skill development training for unemployed youth in their local areas. Individuals, regardless of gender, have equal access to digital services provided by UDC at their doorsteps. The data suggests that UDC may influence the economic development of impoverished populations, especially women residing in rural regions. It is clear that the sustainability of UDC and inclusive governance are interconnected, functioning as complementary components.

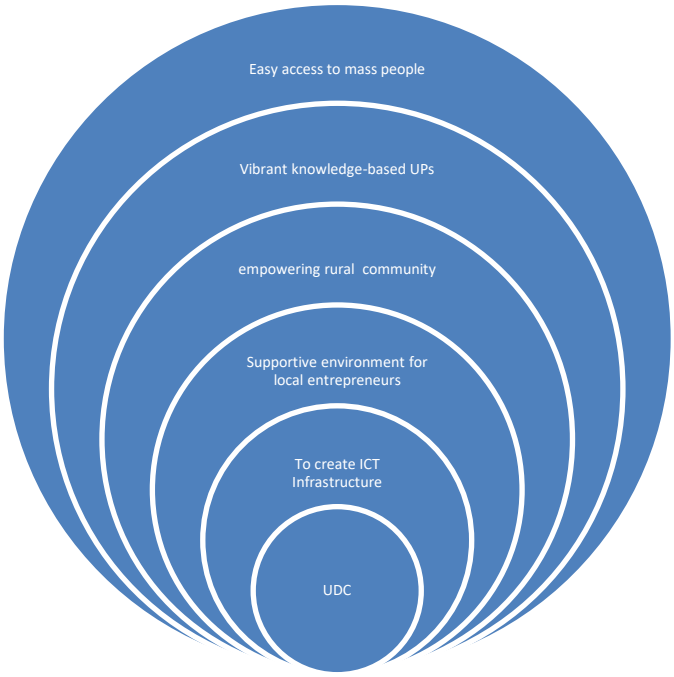



Figure 13: State connected with mass people through UDC

### 4.11. Summary of the chapter

This chapter presents an analysis of the theoretical and conceptual frameworks associated with the Technology Acceptance Model and inclusive governance theories. TAM examines the actual utilisation of service recipients and the comprehensive process of user behaviour within an information technology system. All stakeholders in the relevant field engage in the extensively examined concept of inclusive governance. The focus is on accountability, responsiveness, gender equality, social cohesion, and ethnic ethics. However, the term 'inclusive governance' is misleading, as it fails to elucidate the mechanisms through which nations exhibiting greater inclusivity in both process and outcome have attained their current status. To address exclusion and facilitate inclusive governance processes and development outcomes, it is essential to alter power structures and redefine the interactions between the state and society. The relationship between inclusion as a process and inclusion as an outcome is intricate and non-linear. The study presents a conceptual framework that delineates the pertinent variables.

# CHAPTER FIVE

# UNION DIGITAL CENTRE IN BANGLADESH

## 5.0 Introduction

Digital Bangladesh, previously considered an unattainable vision, has now become a concrete reality. The journey of this endeavour has not been linear since its inception. The strategy for Digital Bangladesh encompasses preparation, awareness, and acceptance. Digital Bangladesh divides its implementation process into two components: technology development and outreach to the underprivileged population. The governance structure of the bureaucracy operates as a conduit, encompassing entities such as the cabinet division, planning ministry, ministry of post, telecommunications and information technology, ministry of local government and rural development, and ministry of public administration at the central level. The implementation of Digital Bangladesh activities has occurred at the grassroots level, under the direct monitoring and supervision of field administration, including divisional, district, and upazila levels. The concept of Digital Bangladesh is founded on four key pillars: human resource development, citizen connectivity, information and communication technology (ICT) in business, and digital governance (Hasan, 2020).

The UDC represents a key initiative within the e-governance framework aimed at realising the objective of a digital Bangladesh. The primary goals of Digital Bangladesh include establishing connections between citizens and the state, integrating information and communication technology within business operations, and facilitating government-to-government networks. Citizens are engaging with the state via digital centres, including the Union Digital Centre, the Pourashava Digital Centre, and the City Corporation Digital Centre. The initiative enhances rural populations' understanding of digitisation, mitigates corruption within public offices, facilitates straightforward access to both public and private services at the grassroots level, removes intermediaries, conserves users' time and costs associated with accessing digital services, and generates employment opportunities for local entrepreneurs. Additionally, the vision of a digital Bangladesh has been realised, with union digital centres significantly contributing to bridging the digital divide in underserved rural regions. This chapter addresses the concepts, background, management, roles of local and national organisations, and functions of the union digital centre.

## 5.1 Background of the digital era in Bangladesh

The evolution of digital government has occurred across multiple phases. Information technology represents a significant component; however, from a historical perspective, political leadership, initiatives, and agendas also play a crucial role (Wiggins, 2000). Al Gore's political initiatives concerning the application of information technology in electronic governance originated in the early 1990s in the United States. In a manner similar to the United States, Europe promptly adopted the concept, as did various developing nations (EC-1999). Political will is a critical factor in the development of sustainable e-government initiatives within any nation (Wiggins, 2000). In 1988, Bangladesh received its initial proposal to connect to the Information Super Highway via an undersea cable. During the period of military dictatorship, Lieutenant General H.M. Ershad declined the offer due to concerns that unrestricted information dissemination would highlight the repression of opposition parties striving to establish democracy in the country (Hasan, 2020). In the wake of the establishment of democracy in 1991, the administrations led by the BNP received a proposal to link Bangladesh to the Information Super Highway via an underwater cable, facilitating connectivity with all South Asian countries. The BNP leadership declined the offer that had been accepted by India, Pakistan, and Sri Lanka, citing the need to protect sensitive state material (Hasan, 2003).

Following its election victory in 1996, the AL administration took the first major step to revitalise the ICT sector in Bangladesh. An IT Task Force was established under the direction of the Prime Minister, and an exemption from taxes was granted for computers and computer equipment. However, regarding the connection of the country to the information superhighway via an undersea cable, the government revised its position and indicated that the matter would be evaluated at a later time (Hasan, 2020). AL took this action because they anticipated that the BNP would politicise the issue and use it for their own agenda. Information and Communication Technology emerged as a significant subject during the general election in Bangladesh in October 2001. Both primary political parties committed to exerting all available resources to enhance the ICT sector. The preceding ruling party, the BNP, which held power from 2001 to 2006, introduced a 32-point platform aimed at ensuring their electoral success. The BNP manifesto outlined a commitment to create an online village staffed by qualified IT professionals. The initiative aims to enhance telecommunications, encompassing internet access, by improving usability, reducing costs, increasing

multidimensional capabilities, and expanding pervasiveness. The leadership of the BNP has committed to placing a high priority on science and information technology. The party committed to establishing an IT institute to achieve this objective. The initiative includes the establishment of IT hubs in each upazila. The opposition AL Party issued a 21-point election program, which includes commitments to alleviate poverty, decentralise governance, and foster the growth of the ICT industry. The AL manifesto proposed the establishment of an IT village aimed at supporting the burgeoning ICT sector, alongside fostering the development of the IT industry and e-commerce in Bangladesh.

In 2002, former Prime Minister Khaleda Zia reaffirmed her administration's dedication to the progression of the ICT sector. On February 4, 2002, she announced the distribution of computers to all elementary schools nationwide. She also committed to advancing the initiative to establish district-wide computer cafés for both educators and students. The administration exhibited reluctance in associating the country with the underwater cable. The opposition political party, the AL, expressed support for the initiative and exerted pressure on the administration to secure connectivity. Donor nations and agencies exerted pressure on the government to initiate and advance e-government initiatives. In 2004, Prime Minister Khaleda Zia publicly criticised the opposition leader, asserting that she (Sheikh Hasina) aims to connect the country to the underwater cable, similarly to how RAW, the Indian Intelligence Service, seeks to align with the will of the people (The Daily Star, March 21, 2004).

From 2004 to 2006, the government faced mounting pressure to establish a connection to the undersea cable, aimed at providing faster and more cost-effective internet access. In early 2006, the prime minister announced that the country would soon be connected to the underwater cable. The administration is currently taking the necessary steps to finalise its implementation. The BNP administration established a connection to the underwater cable in May 2006. The prime minister expressed confidence to a journalist that this development would benefit the nation, supporting future advancements in the IT sector and enhancing e-government initiatives. The interim administration assumed control in 2007 and governed the country for a duration of nearly two years. No significant changes occurred during that period. Political parties and the general public are advocating for the prompt scheduling of a national parliament election. As a result, the government proclaimed the ninth national parliament election in late 2008. The BAL presented the concept of "Digital Bangladesh" as

part of their election platform titled "Vision 2021 Bangladesh: A New Horizon" (BAL, 2008). BAL has committed to implementing administrative reform, enhancing information rights, and advancing e-governance initiatives. The sector of information and communication technology will realise its capabilities. The software and IT services industries will experience growth by providing support to intelligent young individuals and driven entrepreneurs in every feasible way. This strategy is designed to enhance export levels and create additional employment opportunities. The objective of Bangladesh is to achieve digital transformation by the year 2021. Information technology education will be mandated at the secondary level starting in 2013 and at the primary level commencing in 2021. The government plans to reinstate the task force on information and communication technologies, originally established by the Awami League, which became ineffective during the tenure of the BNP-Jamat Alliance. The country plans to establish a high-tech park, a software technology park, an ICT incubator, and computer villages in strategically selected locations (BAL, 2008).

The concept of digital government has evolved through numerous stages. Information technology is clearly one of the most significant components, but from a historical standpoint, another crucial background is political leadership, initiatives, and agendas (Wiggins, 2000). Al Gore's political activities addressing the use of information technology in electronic governance date back to the early 1990s in the United States. Parallel to the United States, Europe quickly replicated the idea, as did developing nations (EC-1999). Political will can be considered a crucial aspect of developing sustainable e-government in any country (Wiggins, 2000). In 1988, Bangladesh got its first offer to join the Information Super Highway through an undersea cable. The military dictatorship at the time, Lieutenant General H.M. Ershad, rejected the offer out of concern that the free flow of information would draw attention to the suppression of opposition parties attempting to impose democracy in the nation (Hasan, 2020). Following the emergence of democracy in 1991, the BNP-controlled administrations got an offer to connect Bangladesh to the Information Super Highway through an underwater cable with all South Asian nations. The BNP leadership rejected the offer, which had been accepted by India, Pakistan, and Sri Lanka, under the guise of preserving sensitive state material (Hasan, 2003). After winning office in 1996, the AL administration made the first significant move towards reactivating Bangladesh's ICT sector. It established an IT Task Force under the Prime Minister's direction and exempted computers and computer equipment from taxes. However, when it came to linking the country to the

information superhighway through an undersea cable, the government changed its mind and said that it would be considered later (Hasan, 2020). In reality, this was done because AL predicted that the BNP would politicise the issue and exploit it." ICT became a major topic in Bangladesh's general election in October 2001. Both main parties promised to do all in their power to improve the ICT industry. The last ruling party, the BNP (2001–2006), presented a 32-point platform to help guarantee their electoral victory. The BNP manifesto included a promise to establish an online village with qualified IT staff. It also promised to make telecommunications, including Internet access, easier to use, less costly, multidimensional, and more pervasive. The BNP's leadership has also pledged to prioritise science and information technology. The party vowed to construct an IT institute to do this. It also promised to establish IT hubs in each upazila.

The opposition AL Party responded with a 21-point election program, promising to relieve poverty, decentralise governance, and promote the expansion of the ICT industry. The AL manifesto also advocated for the creation of an IT village to help the promising ICT sector, as well as the growth of the IT industry and e-commerce in Bangladesh.Former Prime Minister Khaleda Zia reiterated her government's commitment to advancing the ICT industry in 2002. On February 4, 2002, she announced the distribution of computers to all elementary schools across the country. She also committed to pushing the plan to construct district-wide computer cafés for both teachers and kids. The administration, however, was hesitant to link the country to the underwater cable. It was noteworthy to observe that the opposition political party, AL, was in favour of it and placed pressure on the administration to acquire connectivity. Donor nations and agencies were also putting pressure on the government to start and develop e-government. In 2004, Prime Minister Khaleda Zia publicly chastised the opposition leader, stating that she (Sheikh Hasina) wants to link the country to the underwater cable in the same way as RAW, the Indian Intelligence Service, wants to connect the will of the people (The Daily Star, March 21, 2004).

Between 2004 and 2006, the government was under increasing pressure to connect the country to the undersea cable for quicker and cheaper internet access. The Prime Minister said in early 2006 that the country will be connected to the underwater cable shortly and that the administration is taking the necessary measures to conclude its implementation. The BNP administration ultimately linked the nation to the underwater cable in May 2006, and the prime minister told a journalist that she was certain that the country would profit from it,

which would aid future development in the IT industry as well as our e-government projects. The interim administration took control in 2007 and administered the country for nearly two years. Indeed, during that period, no significant changes occurred. Political parties and the general public want a national parliament election as soon as possible.

As a result, they proclaimed the ninth national parliament election in late 2008. In their election platform, "Vision 2021 Bangladesh: A New Horizon", the BAL introduced the notion of "Digital Bangladesh" as an electoral pledge (BAL, 2008). BAL has pledged to undertake administrative reform, information rights, and e-governance. The potential of the information and communication technology sector will be achieved. The software and IT services industries will flourish by aiding smart young people and motivated entrepreneurs in any manner that is possible. This approach will increase exports and generate new job opportunities. Bangladesh's objective is to go digital by 2021. IT education will be required at the secondary level beginning in 2013 and at the primary level beginning in 2021. The government will revive the task force on information and communication technologies, which was established under the AL but rendered ineffective by the BNP-Jamat Alliance. The country will develop a high-tech park, a software technology park, an ICT incubator, and computer villages in strategic locations (BAL, 2008).

### 5.2 Digital Bangladesh: Strategic Planning, Policies, and Legislation

By 2021, Digital Bangladesh intends to leverage ICT as a catalyst for socioeconomic and human development. It was the ruling party's electoral vow and the driving theme of all actions during the government's administration (Hasan, 2012). The primary objective was to achieve socioeconomic change using ICT to elevate the country to middle-income status. According to Access to Information (A2I), the primary areas of digital Bangladesh were human resource development, connecting citizens, digital governance, and increasing the productivity of the private sector (ICT in business) (A2I, 2009).

In the Perspective Plan (PP) 2010–2021, the Planning Commission of Bangladesh's Ministry of Planning set the long-term plan for Vision 2021. Specific implementation methods and tasks were specified in two plans: the Sixth Five-Year Plan (2011–2015) and the Seventh Five-Year Plan (2016–2020) (GED, 2012). The UN Sustainable Development Goals (SDGs) were established in September 2015, and the Bangladesh government included them in its 7FYP.

The Access to Information (A2I) initiative was a key outcome of Bangladesh's Digital Agenda. Its goals are to provide quality, ease of access, and a decentralised delivery of administrative services to citizens. The PPP model was developed to accelerate the development of ICT infrastructure and public services. To secure ICT infrastructure, the government has boosted ICT investment from 2% to 6% of GDP (Rowntree, 2018).

### 5.2.1 ICT Policy Framework in Bangladesh

Recent efforts in Bangladesh's ICT sector have achieved unprecedented success. Prior to the early 1990s, the government-maintained control over the entire information and communication technology (ICT) and telecommunications sector. The liberalisation of markets has facilitated investment and the provision of IT services by private licensees (Hasan, 2012). The Telecommunication Policy created in 1998, the Telecommunications Act passed in 2001, the National ICT Policy launched in 2002, the Right to Information Act of 2009, the Bangladesh Telecommunication Regulatory Commission set up in 2002, and joining the optic fibre submarine network as part of the 16-country group South East Asia-Middle East-Western Europe 4 (SEA-ME-WE 4) started in 2006 all played important roles in building this system. The country initiated these projects as a component of its digitalisation strategy with the objective of advancing a digital agenda. This document outlines a summary of the principal ICT policy strategies developed over the last 15 years.

### 5.2.2 National ICT Policy 2015

The National ICT Policy (NIP) strategy is arranged as a hierarchical pyramid, with a single vision at the top as the ultimate goal and various relevant features (ten objectives, fifty-four strategic themes, and 235 action items) placed in succeeding layers. The vision and objectives are in line with the overarching national goals, and MOPTIT (2015) is a list of various strategic themes and action items to support each goal (MOPTIT, 2015a). The policy aim, according to the NIP, is to expand and diversify the use of ICTs to establish a transparent, responsive, and accountable government; develop skilled human resources; enhance social equity; ensure cost-effective delivery of citizen services through public-private partnerships; and support the national goal of becoming a middle-income country within 2021 and joining the ranks of the world's developed countries by 2041 (ICT Division, 2015). Ten interconnected objectives are being sought to achieve the policy goal: social fairness, integrity, universal access, education and research, employment opportunities, export

strengthening, ICT support, healthcare, environment, climate, disaster management, and productivity. These objectives are backed by a diverse set of strategic themes that detail several action items to be fulfilled in the short term (2016), mid-term (2018), and long term (2021).

The approach is based on the constitutional framework of Bangladesh (Article 19 of the People's Republic of Bangladesh Constitution), which prioritises social inclusion and people's equal participation in society. The goal of social equity, according to Article 19, is to promote "equality of opportunity for all citizens" by eradicating "social and economic inequality between men to confirm the equitable distribution of wealth among all citizens" (MOLJPA, 2024).

The National ICT Policy (NIP) was first established in October 2002, and it was later reviewed and amended on May 4, 2008, yielding 'National ICT Policy 2009'. With some minor changes, 'National ICT Policy 2015' was formally announced on August 5, 2015. The Ministry of Posts, Telecommunications, and Information Technology's (MOPTIT), ICT division plans and develops the NIP, with the Bangladesh Computer Council (BCC) and Bangladesh Telecommunications Regulatory Commission (BTRC) functioning as major policy implementation bodies.

### 5.2.3 National Telecommunications Policy 2015

The National Telecommunications Policy (NTP) was implemented in 1998, setting the framework for Bangladesh's liberalised telecom industry. At that time, it established a clear distinction between centralised policy, regulation, and practical instructions. The Telecommunications Policy of 1998 led to the adoption of the Bangladesh Telecommunication Regulation Act of 2001. Its purpose is to "provide affordable and universally accessible quality telecommunication services to support the nation's sustainable development goals and integrate the country with the global knowledge economy" (MOPTIT, 2015b, pp. 5–6). The NTP provides standard telephone services such as cellular phones, data services, and internet access. The Act has been changed and amended several times to meet expanding telecommunications demand and enhance service delivery. The government established the Ministry of Posts, Telecommunications, and Information Technology (MOPTIT) to combine telecommunications and ICT activities in accordance with the strategy of the seventh five-year plan. The idea was to stimulate private-sector investment while

decreasing central government authority. The Bangladesh Telecommunication Regulating Act (BTRA) of 2001, which updated the Bangladesh National Telecommunication Act of 1998, serves as the foundation for current telecommunications regulations. It was first developed in 2013, with a few adjustments, and it was finally updated and officially recognised in 2015.

### 5.2.4 Right to Information Act 2009

The Right to Information (RTI) Act-2009 was enacted to ensure the unrestricted dissemination of information and to uphold the right of individuals to access such information. The Act is designed to address corruption while fostering good governance, transparency, and accountability across both public and private institutions. The caretaker government implemented the Right to Information Ordinance on October 20, 2008, following significant advocacy and campaigning by civil society representatives, including NGOs and journalists, who called for the enactment of the legislation. The elected government that followed subsequently enacted the Right to Information Act, 2009 (Iftekharuzzaman, 2009). In accordance with the RTI Act, it is mandatory for all government and non-government entities to designate an officer responsible for providing applicants with the requested information. If the applicant does not receive the requested information within 20 (twenty) working days, a complaint may be submitted to the National Information Commission. The Commission will proceed to summon both parties and address the issue through the Civil Court (Paul, 2009).

### 5.2.5 Perspective Plan of Bangladesh 2010-2021: ‘Making Vision 2021 a Reality’

The 'Perspective Plan of Bangladesh (2010–2021): Making Vision 2021 a Reality' serves as a strategic deliverable. The document delineates the government's vision, objectives, and goals aimed at achieving middle-income status by the year 2021. This document outlines a comprehensive framework for the Sixth Five-Year Plan (2011–2015) and the Seventh Five-Year Plan (2016–2020), detailing the strategic and operational approaches necessary for the country's advancement. This strategy statement emphasises two primary objectives: accelerating economic growth and reducing poverty (GED, 2012). Additionally, the General Economics Division (GED) developed the Perspective Plan (PP) during the 6FYP period to delineate strategic objectives and establish a comprehensive framework for achieving Vision 2021 (GED, 2012).

### 5.2.6 ICT (Amendment) Act 2016

The Information and Communication Technology (Amendment) Act 2016 has been the most contested and contentious law in Bangladesh since its establishment in 2006. Several changes and adjustments to the Act were made until 2013 (in 2008 and 2009). Human rights advocates and authors have long called for the repeal of the ICT Act, notably Section 57, claiming that it is vulnerable to misuse by political opponents, adversaries, and law enforcement officials. According to Article 19, several provisions of this statute are overly vague or criminalise legitimate expression. According to the Daily Star (November 4, 2017), nearly 90% of the lawsuits were filed under Section 57, with the bulk of them being filed by male members of the ruling party. In the first seven months of 2017, the court received 342 reports. Section 57 was used to file 300 of them. The maximum jail term under the Act has been increased to 14 years, and police can arrest anybody immediately after filing a prosecution under the ICT Act on suspicions of defamation.

### 5.2.7 Digital Security Act-2018

On January 29, 2018, the cabinet approved the Digital Security Act-2018, which had been initially proposed in 2016, despite significant condemnation from civil society and media activists. Sections 54, 55, 56, 57, and 66 of the ICT Act have been repealed in accordance with the provisions of the legislation's authorisation. According to Section 43 of the draft, a police officer is authorised to conduct a search or make an arrest without the necessity of a judicial order. Sections 17, 28, 31, 32, and 34 of the new legislation categorise specific offences as "non-bailable", determined by the nature of the offence and the corresponding penalty amount. A digital security agency will be established by the government to ensure the preservation of national digital security and to address cybercrime effectively. The ICT Act and the Digital Security Act impose restrictions on freedom of expression by criminalising the online publication of content that "hurts religious sentiment", "creates the possibility of deteriorating law and order", or "prejudices the image of the state".

### 5.2.8 E-Governance

Digital governance refers to the application of technology by governmental entities to transform internal operations and enhance interactions with citizens, thereby influencing societal outcomes (Estevez and Janowski, 2013). The emphasis is on managing electronic

activities to enhance decision-making processes and retrieve precedents from administrative tasks. The system is an electronic state management framework that utilises information and communication technology (Rahman, 2016). E-Governance refers to the application of contemporary information and communication technologies by the government to enhance effectiveness, efficiency, service delivery, and democratic processes (Malodia, S. et al., 2021). The objective of electronic governance is to transform the structure and function of government. The process encompasses three critical components: the government, the populace, and commercial interests. The e-government components include government to citizen (G2C), government to business (G2B), and government to government (G2G). G2C denotes the interactions that occur between individuals and governmental entities; G2B signifies the interactions that take place between businesses and governmental bodies; and G2G represents the interactions that happen among government personnel. Among the three essential components of e-governance, e-government encompasses the independent interactions between government entities.

### 5.3 Digital Bangladesh

In the 2008 election platform (Hasan, 2016), the BAL advocated for the establishment of a digital Bangladesh. The position was subsequently reaffirmed by the newly elected government in 2009 (IGS, 2010). The objective for DB is to leverage information and communication technology to facilitate economic and human development by the year 2021. The four pillars consist of human resource development, citizen connectedness, digital governance, and ICT in business. The initial pillar emphasises the cultivation of exceptional skills in mathematics, science, and English through the creation and distribution of digital content (A2I, 2009). The second pillar emphasises citizen connection through the provision of ICT-based access to public services, the offering of locally relevant digital materials, and the development of new channels for engagement. The third pillar of digital governance for pro-poor services focuses on the implementation of technology across various government departments to facilitate seamless access to services. This segment is categorised into e-citizen services and e-administration, designed to offer low-cost, transparent services alongside expedited and more economical delivery methods. The fourth pillar pertains to Information and Communication Technology (ICT) in the business sector. The document focuses on market access, ICT enterprise marketing, and the expansion of ICT as an export-orientated sector. The main objective is to enhance the access of disadvantaged

manufacturers to ICT-based markets. The secondary subcomponent aims to support the ICT industry by offering services and technology that facilitate the other components. The third sub-component enhances the export orientation of the ICT industry. The DB vision includes five key factors needed to connect it with the national development plan: creating a system for institutions, building rules and laws, improving the infrastructure for banking and financial transactions, finding new ways to deliver services, and encouraging teamwork between the public and private sectors.

### 5.4 Expansion of Telecentres in Bangladesh

The telecentre movement in Bangladesh commenced in the late 1980s. The WSIS conferences held in Tunis and Geneva provided the foundational inspiration for this initiative. In 1987, the Dhaka Ahsania Mission, a non-governmental organisation (NGO), established the first community learning centre, referred to as the Gonokendra (public centre). This centre was designed to offer facilities for reading newspapers, sharing experiences, learning from success stories, and acquiring knowledge about innovations aimed at enhancing livelihoods. Gonokendra depended primarily on printed materials, as only 5% of the facilities were equipped with computers, and none had access to the internet. Over 100 Gonokendras were ultimately established throughout the country.

In 2001, numerous non-governmental organisations (NGOs) established telecentres. Amader Gramme Learning Centre (AGLC) is an online learning project initiated by Relief International Schools' division. Katalyst aims to promote economically sustainable rural ICT initiatives in Bangladesh. Both projects are noteworthy examples in this context. Katalyst, in partnership with two private sector entities, initiated an entrepreneurship-focused initiative to establish rural ICT centres (RICs), referred to as Alokito Gramme (Enlightened Village) and GHAT. In 2005, the Development Research Network (D.Net) established four Pallitathaya Kendras (Rural Information Centres) in rural regions. Subsequently, in 2006, Practical Action Bangladesh developed two Rural Technology Centres (RTCs) aimed at contributing to poverty reduction efforts. The introduction of GSM-based internet connections (GRS and EDGE) in Bangladesh's telecommunications sector significantly impacted the expansion of telecentres throughout the country.

The presence of bureaucratic administrative systems, resistance from civil service to reform, the concentration of government agencies, and the prevalence of bribery as a form of

corruption have consistently hindered Bangladeshi citizens in their pursuit of public services and information. This circumstance has resulted in a significant decline in public service usage among millions of individuals while simultaneously negatively impacting government organisations and residents.

The circumstances are markedly more challenging for rural residents, they are characterised by higher poverty rates, lower levels of education, greater geographical isolation, and diminished empowerment. Rural residents in Bangladesh are required to travel to the district or sub-district administrator's office to access state services. This office is located approximately 30–40 km or 10–20 km from their residences. Rural residents are compelled to engage a market intermediary or an individual with direct access to public authorities to acquire the information and services they require. The overall analysis indicates a substantial level of unequal access to public services, along with limited participation in market opportunities and decision-making processes. The outcome is a service delivery system characterised by unpredictability, resulting in significant time wastage, diminished wages for the rural poor, and heightened dependence on intermediaries to minimise the frequency of trips to public offices at both district headquarters and subdistrict levels.

Due to the existing configurations within the public sector, insights gained from both local and international telecentres, recommendations from international development organisations, and the political manifestos of the current governing party regarding e-governance and e-service delivery have been adopted in Bangladesh. The current administration's "Bangladesh Vision 2021" encompasses the implementation of e-governance technologies and the provision of governmental services in rural areas, specifically via UDCs. In 2007, two Community e-Centres (CeCs) were established as pilot projects in partnership with UNDP, USAID, and various local strategic partners. The purpose of these centres is to provide rural populations with access to information and government services (Hoque and Mahiuddin, 2013). CeC was highlighted as a key initiative supported by the Access to Information (A2I) programme of the Prime Minister's Office in early 2008. A2I initiated 30 Community e-Centres (CeCs) at the Union Parishad level. Subsequently, the CeCs underwent a rebranding to become Union Information Service Centres (UISCs), and the Local Government Division (LGD) systematically established UISCs across all Union Parishads in Bangladesh. The UISCs underwent a rebranding as Union Digital Centres (UDCs) in August 2014. They have since developed into comprehensive multifunctional telecentres,

exemplifying a distinctive model of public-private partnership (PPP) in the dissemination of technology.

### 5.5 The Concept of the Union Digital Centre

Union Digital Centres represent a digital innovation in Bangladesh, facilitating connections between rural populations and government agencies. At the UP level, two entrepreneurs operate UDCs that provide digital public and private services (Bakshi and Rahman, 2016; Islam and Sharmin, 2023). The principles of UDC require that all individuals receive equal treatment, following a first come, first served policy. The objective is to enable individuals in underserved communities by providing access to information services. The primary objectives of union digital centres include facilitating convenient access for the public to government, informational, and commercial services; enhancing ICT infrastructure across all Union Parishads; and increasing efficiency by ensuring the timely delivery of information and other routine services. The initiative promotes an environment that supports local entrepreneurship, ensures the free flow of information to empower rural communities, and develops a vibrant, knowledge-based urban planning framework (Saleheen, 2015). Local government entities are progressively implementing UDCs to accomplish this objective. UDCs facilitate internet connectivity for underserved populations, enhancing both domestic and international communication capabilities. Services are provided in the areas of agriculture, education, health, human rights, law, employment, marketing, and various government functions, utilising voice, video calling, animation, and text formats. Skill development is facilitated through various training programmes, which include computer training and commercial computer-related services such as printing, scanning, photocopying, and photography. The objective is to ensure that accessible information services among grassroots individuals empower them.

### 5.6 The Establishment of the Union Digital Centre

The establishment of a digital Bangladesh constitutes one of the AL-led government's electoral commitments. The establishment of UISC facilitates the unrestricted exchange of information at the grassroots level, which is essential for achieving that objective. Additionally, the administration of UISC facilitates the implementation of the Right to Information Act of 2009. The government of Bangladesh is dedicated to providing information and technology services to the public, having signed the World Summit on

Information and Society (WSIS) Plan of Action 2003. The government's objective of poverty reduction is also presented as facilitating the unrestricted dissemination of information. By 2020, UISC is projected to serve as the knowledge centre and focal point for local growth, potentially playing a critical role in this context. The GOB implemented the Vision 2021 plan in 2008 with the objective of transitioning the nation into a digital society.

In 2009, the GOB enacted an ICT act with the objective of integrating all citizens into the A2I programme to realise the vision of a digital Bangladesh. Rural populations, which constitute more than 70% of the total demographic, encounter several challenges. These include insufficient access to information, exclusion from governmental policy-making processes due to deficiencies in healthcare, and restricted employment opportunities (Bakshi and Rahman, 2016). In 2009, the plan was distributed to more than 30 unions through collaboration between the LGD and the A2I programme under the Prime Minister's Office. In 2010, UDCs were established to address these issues, with the objective of creating a comprehensive service entity for all 4547 unions in Bangladesh. Local business owners direct the UDCs; the UP hosts these centres; and the Central Administration provides support for them (A2I, 2015). The UDCs serve as centralised information and service delivery points, established by the lowest tier of local government (unions) under the Ministry of Local Government, Rural Development, and Cooperatives since 2010. In 2010, the GOB established Union Digital Centres in nearly every union to enhance the accessibility of information and services for remote, rural, and semi-urban communities (Rashid and Shafie, 2018).

The Access to Information Programme, under the Prime Minister's Office, has initiated the establishment of UDCs to utilise technology at local levels and create public and private service delivery points at each UP and district headquarters. As of 2023, there are 4,565 UDCs distributed across 64 districts in Bangladesh, functioning as information hubs for rural communities. UDCs, originally referred to as Union Information and Service Centres (UISCs), exemplify advancements in service accessibility, facilitating rural communities in obtaining government and commercial services through innovations in information and communication technology and mobile technology (Bakshi and Rahman, 2016). The UDC initiative functions within the specified configuration outlined below:

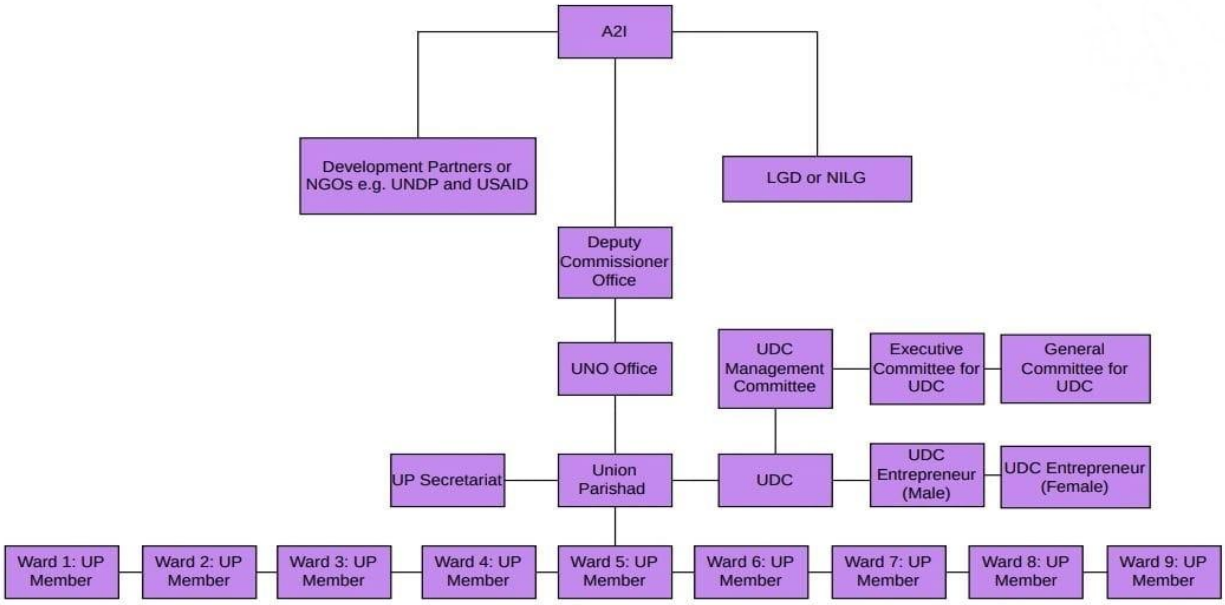



Figure 14: The organizational flowchart of UDC management.

### 5.7 Union Digital Centre: Role of National and Local Stakeholders

The Union Digital Centre functions by collaborating with various local and national organisations, even though it was originally established as a union-based information centre. This document provides a comprehensive overview of the roles of various institutions.

#### 5.7.1 Access to Information (A2I) Programme:

Under the Access to Information (A2I) Programme, establish a complimentary digital information library for UDC and offer technical assistance to UP and UDC entrepreneurs to facilitate the development of their enterprises. A range of motivational activities will be implemented to promote the use of the UDC's information services among a broad audience. The implementation of the plan will occur at both national and local levels. Examples of nationally significant programming include radio and television broadcasts, articles and features published in daily newspapers, seminars, and workshops. The main initiatives at the local level consist of communication efforts, meetings, rallies, audio announcements, exhibitions at Hatbazar, the distribution of booklets and posters, sticker dissemination, and the organisation of various contests in schools and colleges. Active participation from upazila and district focal points will be required for this endeavour. The skilled development programme encompasses entrepreneurs from UDC who will receive comprehensive training. The training is conducted at both central and local levels as required. A workshop and

orientation will be conducted simultaneously for the UP chairman, the Upazila Nirbahi Officer, the District Focal Point, and members of the various committees involved in the programme's execution to enhance their understanding of these training programmes.

### 5.7.2 Development partners and NGOs

The United Nations Development Programme (UNDP) and the United States Agency for International Development (USAID) are collaborating with the government of Bangladesh to implement UDCs as development partners (A2I, 2020). They facilitated the provision of financial and technical assistance tailored to the specific needs of the project, as well as localised support during its execution.

### 5.7.3 Technical Support Organizations

The UDCs are currently obtaining technical support from the Bangladesh Computer Council (BCC), UNDP, and USAID (A2I, 2020). The objectives include promoting skill development, supporting the implementation of innovative programmes, aiding in the selection of local UDC entrepreneurs, and providing technical assistance for specific operational and maintenance needs.

### 5.7.4 Institutional Organizations

The criteria for selecting UP as the location for the establishment of UDCs are detailed. The criteria for the initial selection of the UP were established as follows during the first stage: The New UP complex provides accessible power supply, and personal computers along with printers are available within the UP. The UP serves as the closest hat or market to the region. Local individuals were designated to the UP, which is led by an inspiring chairman. Additionally, there is a growing interest among local youth in establishing digital centres within the Union Parishad. The existing UP complex remains applicable in the second stage, notwithstanding the absence of a new UP complex. The UDC is equipped with an available electrical connection. In the absence of computers or printers, the LGSP and the revenue budget may be utilised for their procurement. The UP chairman demonstrates significant potential, and the local unemployed youth express interest in managing UDCs. In the third stage, the UP currently does not have a power connection, although there are plans for solar panel installation. Additionally, the UP lacks computers and printers, but there is a possibility

of acquiring these through the LGSP and the revenue budget. Moreover, the UP has potential, particularly concerning the UP chairman.

### 5.7.5 Local Government Division, or National Institute of Local Government (NILG)

The Local Government Division, or National Institute of Local Government (NILG), is tasked with several key functions: establishing a principled position in favour of the creation of UDC at the UP level; issuing a notification to announce the initiation of UDC in the field; executing a comprehensive nationwide awareness campaign; and overseeing national and international institutions and donor organisations to secure technical and financial support for UDCs. Establish interministerial communication as required for efficient project coordination; analyse and evaluate the UDC's activities; and produce a biweekly report.

### 5.7.6 Deputy Commissioner Office as a focal point

The Deputy Commissioner (DC) holds the responsibility for overseeing district administration. The DC office serves as a central entity responsible for the monitoring and supervision of UDCs. To assess the role of the Upazila administration and Union Parishad as central entities in the attainment of the objectives set forth by the union digital centre: To support the Upazila administration in selecting the Union Parishad as the organisation responsible for launching the UDC; to provide assistance to the UDC in administrative, technical, and financial aspects to achieve financial self-sufficiency; and to act as a district coordinator by enhancing the UDC's engagement with other governmental and non-governmental entities. The responsibilities also include implementing field training programmes, educating the general public and their representatives about various concepts of e-services and e-governance, monitoring and evaluating the performance of the UDC, scheduling a monthly meeting to assess the organization's performance, submitting a monthly report in a designated format to the central focal point and the prime minister's office, and conducting visits to UDCs based on the priority list during a district administration's field visit.

### 5.7.7 UNO Office as focal point

The Upazila Nirbahi Officer serves as the head of the Upazila administration. UNO functions as a primary monitoring authority for UDC, acting as a central focal point. The objective is to finalise the selection of Union Parishad for the establishment of UDC. The task includes

providing assistance to the UDC in administrative, technical, and financial matters to ensure financial self-sufficiency. Additionally, the role of coordinator will be emphasised by enhancing UDC's engagement with various government and non-government institutions. Arrangements will be made for the procurement of computers, printers, laptops, and multimedia equipment for all UDCs. Furthermore, efforts will be directed towards educating the general public and people's representatives regarding e-services and e-government initiatives. Monitor and analyse UDC's performances. Visit UDC at least once a month. Schedule a meeting to review the organization's effectiveness. Present a monthly report in a specific format to the focal point of the district administration.

### 5.7.8 Union Parishad

The Union Parishad serves as the primary investor in the Union Digital Centre. The Union Parishad consistently monitors, manages, and ensures the UDC's accountability. UP is tasked with ensuring accessibility to an appropriate location for the establishment of the centre, procuring and purchasing essential furnishings for its construction, and obtaining and supplying components that fall outside the purview of the entrepreneurs. The UP is also responsible for establishing connections for water and power supply, along with other essential institutional benefits, ensuring compliance with security and safety standards, supporting the execution of the management committee's program for UDC, overseeing and evaluating UDC operations, securing financial and infrastructure support from local and national sources for UDC's growth, and delivering a monthly performance report regarding UDC.

### 5.7.9 UDC Management Committee

To ensure the effective operation of the UDC, a management committee consisting of seven to nine members has been established (Ahsan et al., 2010). The chairman of the UP shall function as an ex officio member of this committee. The term of the UDC management committee is established as two years. The UDC general members' committee is responsible for the direct election of the UDC management committee. Prior to the establishment of the elected UDC management committee, UP members will convene to create a committee composed of reliable, qualified, and promising local individuals. The duration of the ad hoc committee will be restricted to a period of one year. The group will consist of one-third female representation and will encompass a range of professions and sectors. The UP

secretary is responsible for delivering a range of institutional and additional support to the UDC management committee.

#### 5.7.9.1 Duties and responsibilities of the UDC management committee

The UDC management committee oversees the comprehensive operations of the UDC. The UDC management committee is responsible for the following tasks: selecting UDC entrepreneurs, acquiring and gathering resources for UDC, and providing administrative assistance and other services to establish and maintain the required components. Coordinate multiple programmes aimed at promoting the utilisation of government information services within communities, provide assistance to UDC enterprises in maintaining accurate records, and ensure the submission of reports to higher authorities. Conduct a performance review of UDC on a monthly basis. Every two years, the committee holds a general meeting to review and approve UDC's income and expenditure report.

#### 5.7.9.2 The selection of UDC entrepreneurs

The UDC management committee will identify entrepreneurs from a pool of educated young individuals who demonstrate computer literacy or relevant knowledge. The UDC management committee will give preference to females and unemployed youth. The UDC management committee will select entrepreneurs based on established guidelines and values. The Union Parishad will not classify the selected UDC entrepreneurs as workers. Entrepreneurs associated with UDC also provide financial support for the establishment costs of the UDC. Consequently, enterprises will generate revenue from UDC services following three years of operation. After the initial three years of UDC's operation, the Union Parishad will establish a strategy for the allocation of UDC revenue and expenditures, considering the mutual benefits for both entrepreneurs and the Union Parishad.

#### 5.7.9.3 Terms and conditions for UDC entrepreneur selection

Local entrepreneurs, specifically educated and unemployed young people who possess the capability and willingness to invest between 20,000 and 50,000 BDT, are required to demonstrate enthusiasm, diligence, and strong organisational skills. Entrepreneurs are required to possess both the interest and the capability to encourage local residents to utilise the UDC's information services, as well as to formulate an effective motivational plan for these services. Entrepreneurs are required to maintain a local address and demonstrate

residency in the area for a significant duration. Self-discipline and ethical conduct are essential qualities for entrepreneurs. An entrepreneur possessing skills or interests in computer or information technology should demonstrate a strong commitment to delivering information services to the local community, in collaboration with Union Parishad.

#### 5.7.9.4 Infrastructure of the UDC

The Union Digital Centre will be established in an appropriate location within the Union Parishad Complex. Union Parishad is responsible for ensuring the overall security of UDCs and will provide the necessary administrative support for the operation of Union Digital Centres.

#### 5.7.9.5 The elements of UDC

The Union Digital Centre requires one or more computers and additional essential equipment to effectively provide advanced information services to the local population. This setup can be implemented progressively. The UDC can initiate its services with the following minimal equipment: one computer, one black-and-white printer, one colour printer, one stabiliser, an internet modem for online connectivity, one scanner, and one digital camera. The UDC is projected to require a budget of one lakh taka. For the complete operational phase of UDC, the subsequent requirements must be met: The necessary equipment comprises two computers equipped with stabilisers: one laser printer, one colour printer, one internet modem, one scanner, one digital camera, one webcam, one multimedia projector featuring a large screen, and one generator. It is important to acknowledge that the availability of equipment at UDC may vary based on local demand.

#### 5.7.9.6 UDC entrepreneurs' duties and obligations

Upon receiving authorisation from the UDC management committee, proceed to maintain access to UDC services for service seekers, deliver information services to the community, and execute a range of motivational programmes designed to enhance villagers' engagement with these information services. The union digital centre must methodically record and evaluate its income and expenses. Provide updates to the UDC management committee during monthly or biannual meetings, along with any additional gatherings as necessary.

#### 5.7.9.7 The list of information services at UDCs

The information bank at UDC offers two types of information services. One system is operational online, whereas the other system is currently offline. The information bank is categorised into four distinct sections: animation, audio, video, and text.

##### 5.7.9.7.1 Information obtained via the internet or online

UDC has an internet connection that allows anyone in the Union Parishad to communicate with people all over the world. Furthermore, relevant information may be obtained from several national and international websites.

##### 5.7.9.7.2 Offline information bank

Additional information services will be provided online at the UDC. Offline information services will encompass agriculture, health, education, law and human rights, employment, bazaars, and various government forms, among other categories.

##### 5.7.9.7.3 Commercial Service 1

UDC will offer commercial services at an affordable cost. Examples encompass email communication, internet browsing, computer composition, printing processes, colour photography, scanning techniques, and renting multimedia projectors.

##### 5.7.9.7.4 Commercial Service 2

UDC will offer a range of training programs for skill development, including computer training, tailoring, electrical line and device repair, and the creation of various industrial products, like candles, compost, and natural fertilisers.

##### 5.7.9.7.5 Advisory services

The Union Parishad ensures that professional assistance from physicians and agriculturalists is accessible at the UDC. Examples of advisory services include soil tests, fertiliser, pesticides, fishing advice, health advice, land registration assistance, legal advice, and related services. Non-governmental organisations (NGOs) working at the Union Parishad level also offer advice in their respective professions.

### 5.7.10 Executive Committee for the UDC

Ex officio, the chairman of the Union Parishad shall be the president of the UDC's executive committee. The general members elect the EC vice president. The UDC management committee's members also elect the organisation secretary, the finance secretary, the social motivation and public relations secretary, and the general secretary. In addition, general members choose three executive members.

### 5.7.11 General Committee for UDC

The Union Parishad comprises the following ex officio members: elected representatives of the Union Parishad, all government employees operating at the Union Parishad level, heads of both government and non-government educational institutions within the Union Parishad, and leaders of professional and social groups that have received government approval. A minimum of six individuals will be selected for the general membership of the UDC management committee. Candidates must demonstrate a genuine interest in contributing to UDC and possess a positive reputation within their community. The election of ward representatives will involve participation from all UP-ward members, as well as leaders from various educational and religious institutions, including mosques, temples, churches, pagodas, and similar entities.

## 5.8 Summary of the chapter

The chapter discusses the establishment of the Union Digital Centre in Bangladesh, highlighting its legal preparedness and the roles of stakeholders at central and field levels. The success of UDC depends on the skills, sincerity, investment, and responsiveness of its stakeholders. The chapter also details government initiatives, including the PPP model, which facilitates public engagement with UDC. Active monitoring and supervision of focal points at the field level are essential for the success of this initiative. The UDC model of e-governance expects public offices to operate without corruption.

# CHAPTER SIX

# THE STATUS OF WOMEN IN HAOR REGIONS OF BANGLADESH

## 6.0 Introduction

This chapter discusses the status of women in the haor region of Bangladesh. Women lead two major political parties. The previous prime minister held the position as a woman, and the leader of the opposition in parliament was likewise a woman. Additionally, from 1991 to 2024, Bangladesh experienced governance under female leadership, with the exception of two interim governments that occurred during the period of 2007 to 2008 and the subsequent period starting August 8, 2024. However, it does not offer an in-depth look at the status of women throughout the country. Women continue to face challenges in coming forward within societal and state contexts. This chapter focuses on the legal status of women; their participation in education, health, employment, politics, and information and communication technology (ICT); and their conditions in these various domains.

## 6.1 Legal status of women

Bangladesh's constitution offers equal rights for men and women, including equal job opportunities and compensation for equal effort[2]. However, women's rights are not universally recognised, with exceptions for subjects handled by personal law[3]. The Muslim Family Laws Ordinance of 1961 and its revision in 1986 govern matters such as marriage, divorce, guardianship, property inheritance, and maintenance. Inheritance regulations show that daughters receive half of what sons receive from the father's estate, while wives receive

[2] According to Article 28(i), the state is prohibited from discriminating against any person based solely on their religion, race, caste, sex, or place of birth. Additionally, Article 28(ii) ensures that women have equal rights as men in all aspects of the state and public life. (iii) This article does not prohibit the state from implementing specific measures to support women and children. According to Article 29(i), no person may be disqualified or subjected to discrimination based on their gender when it comes to any job or position in the service of the republic. For more information about the constitutional provisions, see the World Bank publication from 1990.

[3] As an example, in 1972, a total of 15 seats were specifically designated for women in the parliament. Subsequently, in 1979, this number was raised to 30. Provisions for municipal governance were established in 1977. The United Nations Development Programme (UNDP) provides a more up-to-date report on the involvement of women in the public administration sector in Bangladesh in 2012.

half of their husband's estate[4]. Religious laws also sanction disparities in marriage and divorce, with men having unilateral rights to divorce and polygamy, while women may only have the right to divorce when specifically provided for in the marriage contract. The Citizenship Act of 1951 allows citizenship to be passed down from father to son but not through mother, and there is legislation allowing a Muslim man to marry a non-Muslim woman but not a Muslim woman to marry a non-Muslim man[5]. The Dowry Prohibition Act of 1980 and the Cruelty to Women (Deterrent Punishment) Act of 1983 are laws designed to protect women's interests but often favour men. The Dowry Prohibition Act of 1980 made dowry-giving and receiving offences punishable by fines and imprisonment, but the legislation has not been properly implemented[6]. The Cruelty to Women (Deterrent Punishment) Act of 1983 punishes offences like kidnapping, trafficking, and cruel harm to spouses for dowry. Bangladesh established a central cell in the Ministry of Women and Children Affairs in 1989 to ensure these laws are effectively implemented. However, Bangladesh has become one of the worst examples of violence against women globally[7].

### 6.2 The status of women in haor region of Bangladesh

Bangladesh has made significant progress in empowering women, with improvements in education and healthcare, increased labour force participation, and government efforts to advance gender equality. However, the current situation of women in Bangladesh is complex, with challenges such as social inequality, economic decision-making, household decision-making, education, occupation, family planning conversations, age at marriage, freedom of

[4] An ostensibly progressive attempt was made through the adoption of the National Women Development Policy 2010 to reform the property laws in favour of women. However, it met with serious resistance from conservative religious leaders, while the rights activists contended that the policy had not done anything substantive to improve women's property rights anyway. For an account of the ensuing debate, see Gayen (2011).

[5] S. Khan (1988) provides an extensive discussion of such legalised disparities.

[6] According to the human rights organisation Odhikar, at least 2800 women were killed, 1833 women were physically abused, and 204 committed suicides due to dowry-related issues between 2001 and 2014. The persistence of dowry and its pernicious effects have led to further strengthening of legal sanctions against dowry through the Dowry Prohibition Bill of 2018.

[7] Violence against women is a broader term that goes beyond domestic violence against women. For an elaborate discussion on this issue, see Heise et al. (1994).

movement, political representation, and legal rights (Paul et al., 2016). Education plays a critical role in empowering women by enhancing their autonomy, enabling greater control over their lives, and amplifying their voices in family and community matters (Ibid., 2016). The indicators reflecting women's status in Bangladesh rank among the lowest globally concerning social equality, education, employment, marriage, and health outcomes. Community norms play a crucial role in women's empowerment and frequently outweigh individual traits (Ibid., 2016). Increasing the empowerment of rural Bangladeshi women requires the promotion of gender equality, educational empowerment, and the active involvement of women in decision-making processes (Ibid., 2016). Factors contributing to the disempowerment of women encompass economic aspects, including dependency on men, land ownership issues, and restricted employment opportunities. Additionally, socio-cultural and religious influences play a significant role, with issues such as illiteracy, social neglect, cultural indifference, and practices like purdah, or seclusion. Political factors also contribute, including the apathy of political parties, limited engagement in electoral politics, and discrimination within households (BBS, 2023).

Bangladesh has achieved significant advancements in the reduction of gender inequality, attaining a rank of 50th among 153 countries in the 2020 Global Gender Gap Report (Global Gender Gap Report, 2020). Nonetheless, challenges remain in advancing women's economic empowerment in Bangladesh (GED, 2020a). The participation rate for women in the labour force is recorded at 36%, which does not align with the nation's classification as an upper-middle-income country (GED, 2020a). The nation has achieved international recognition for its accomplishments in women's empowerment, effectively closing the gender gap in primary and secondary education, and making significant progress in reducing disparities at the tertiary level (GED, 2020a). The execution of the National Women Development Policy (NWDP) 2011 has persisted during the 7th Five-Year Plan, with data from the LFS 2016–17 demonstrating advancements in increasing the representation of women in managerial and professional leadership positions (GED, 2020a). Concerns continue to exist regarding economic participation and opportunities, primarily due to the insufficient involvement of women in the labour force, wage disparities, and inadequate representation in senior civil service and managerial positions (GED, 2020a). The Constitution of Bangladesh guarantees equality between women and men in all areas of public life. The Bangladesh government is committed to advancing women's overall development by facilitating their fair and active

participation in mainstream socio-economic activities while also addressing the barriers that impede their empowerment.

### 6.2.1 Women in population size

The preliminary findings of the 2022 Population and Housing Census indicate a total population of 165,158,616, comprising 81,712,824 males and 83,347,206 females. The population size in rural areas is comprised of 55,166,842 males and 57,890,462 females. The current female-male ratio stands at 100:98.04 (BBS, 2023). The World Bank's compilation of development indicators recorded the female population in Bangladesh at 50.43% in 2022. The Population and Housing Census 2022 reports that the total population of the seven haor districts is 19.93 million. The Haor region has a total population of 9.64 million males and 10.30 million females, as reported by the Bangladesh Bureau of Statistics (BBS, 2023).

### 6.2.2 Women in education

The preliminary report of the "Population and Housing Census 2022" indicates a significant improvement in the female literacy rate in Bangladesh, which has reached 72.82% for individuals aged seven years and over. In rural areas, literacy rates by sex are 69.93 percent for women and 73.29 percent for men, respectively (BBS, 2022b). Table 6 displays the literacy rate of individuals aged 7 years and older, categorised by sex and locality, for the years 2012–2017. In 2012, the literacy rate for women in rural areas was recorded at 47%, while the literacy rate for men was 52.7%. The literacy rates for women and men in urban and rural areas were recorded at 53.3% and 59.2%, respectively. In 2013, the literacy rate for women in rural areas was recorded at 51.9%, while the literacy rate for men was noted at 55.1%. The literacy rates for women and men in urban and rural areas were recorded at 55.1% and 59.3%, respectively. In 2014, the literacy rates in rural areas were recorded at 53.1% for men and 57.2% for women. The literacy rates for women and men in rural and urban areas are recorded at 56.6% and 60.7%, respectively. In 2015, the literacy rates for women and men in rural areas were recorded at 55.1% and 59.2%, respectively. The literacy rates for women and men in rural and urban areas were recorded at 61.6% and 65.6%, respectively. In rural regions in 2016, the literacy rates for women and men were recorded at 63.3% and 67.3%, respectively. The literacy rates for women and men in rural and urban areas were recorded at 68.9% and 73.0%, respectively. In rural areas in 2017, the literacy rates for women and men were recorded at 64.4% and 68.6%, respectively. The literacy rates

for women and men in both rural and urban areas were recorded at 70.2% and 74.3%, respectively.

Table 6: Literacy rate of population 7 years and over by sex and locality 2012-2017

| Year | Rural (%) | | | Urban (%) | | | Total (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Women | Men | Both | Women | Men | Both | Women | Men | Both |
| **2012** | 47.0 | 52.7 | 49.9 | 64.3 | 70.4 | 67.4 | 53.3 | 59.2 | 56.3 |
| **2013** | 51.9 | 55.1 | 53.9 | 66.2 | 70.9 | 68.6 | 55.1 | 59.3 | 57.2 |
| **2014** | 53.1 | 57.2 | 55.2 | 68.4 | 72.6 | 70.5 | 56.6 | 60.7 | 58.6 |
| **2015** | 55.1 | 59.2 | 57.2 | 71.2 | 75.3 | 73.3 | 61.6 | 65.6 | 63.6 |
| **2016** | 63.3 | 67.7 | 65.5 | 75.8 | 79.6 | 77.7 | 68.9 | 73.0 | 71.0 |
| **2017** | 64.4 | 68.6 | 66.5 | 77.5 | 81.5 | 79.5 | 70.2 | 74.3 | 72.3 |

Source: Bangladesh Sample Vital Statistics 2012-2017, BBS

This nation is the first South Asian country to attain gender parity in primary education (CRI, 2018). In public institutions, education for girls up to grade XII is provided at no cost, and stipends are offered to promote ongoing education and mitigate dropout rates. Table 7 presents dropout rates categorised by grade and sex over a five-year period, specifically from 2013 to 2017. The table presented indicates an upward trend in the dropout rates for both girls and boys as they progress from lower grades to higher grades. The analysis of five-year statistics from 2013 to 2017 reveals a notable trend, indicating that the dropout rate is highest among boys in comparison to girls.

Table 7: Dropout rate by grade and by sex 2013-2017

| Sex | Grade 1(%) | Grade 2 (%) | Grade 3 (%) | Grade 4 (%) | Grade 5 (%) |
|---|---|---|---|---|---|
| 2013 | | | | | |
| Girls | 0.4 | 4.4 | 4.0 | 7.5 | 1.4 |
| Boys | 2.5 | 5.8 | 5.9 | 8.1 | 3.2 |
| Total | 1.5 | 5.1 | 5.0 | 7.8 | 2.3 |
| 2014 | | | | | |
| Girls | 0.4 | 5.7 | 2.3 | 6.8 | 2.2 |
| Boys | 2.0 | 3.5 | 7.4 | 9.4 | 2.4 |
| Total | 1.2 | 4.6 | 4.8 | 8.1 | 2.3 |
| 2015 | | | | | |
| Girls | 0.8 | 2.5 | 3.0 | 8.5 | 2.0 |

| | | | | | |
|---|---|---|---|---|---|
| Boys | 2.3 | 4.0 | 4.0 | 11.8 | 2.2 |
| Total | 1.6 | 3.2 | 3.4 | 10.1 | 2.1 |
| 2016 | | | | | |
| Girls | 1.0 | 1.3 | 2.6 | 9.1 | 1.7 |
| Boys | 0.5 | 4.4 | 6.0 | 10.5 | 1.1 |
| Total | 0.7 | 2.9 | 4.2 | 9.8 | 1.5 |
| 2017 | | | | | |
| Girls | 0.3 | 1.2 | 3.3 | 9.3 | 1.6 |
| Boys | 2.8 | 4.8 | 4.6 | 6.6 | 3.6 |
| Total | 1.6 | 3.0 | 3.9 | 7.9 | 2.6 |

Source: BANBEIS 2013-2017

In 2020, another study reveals that the overall dropout rates by grade across the country are grade 1 (1%), grade 2 (1.5%), grade 3 (4.9%), grade 4 (7.6%), and grade 5 (2.2%), respectively.

Table 8: Overall dropout rate by grade (%), 2020

| | Grade 1(%) | Grade 2 (%) | Grade 3 (%) | Grade 4 (%) | Grade 5 (%) |
|---|---|---|---|---|---|
| All | 1.0 | 1.5 | 4.9 | 7.6 | 2.2 |

Source: DPE (APSC 2019), BANBEIS, 2020

Female enrolment now stands at 51% in primary schools and 53% in secondary schools (CRI, 2018). To improve female literacy, the government has introduced various programmes, including free books for all primary-level schoolchildren, free education for girls up to university, and stipends for girls in rural secondary schools (CEDAW, 2015). Additionally, the government has run a food-for-education programme and a cash transfer programme for poor households in rural areas to attract female students (Ahmed and Chowdhury, 2005). Bangladesh has also reserved 60% of primary school teaching positions for women (CEDAW, 2015), which has been successful in raising enrolment, increasing class attendance, reducing dropout rates, and deterring early marriage. Another policy focus is encouraging more women's participation in vocational training, as 50% of the working-age population is female (GED, 2020b). However, the female labour participation rate is only 36%, partly due to a lack of education and labour skills (GED, 2020b). To narrow the gender gap in vocational education and skill-based training, the Perspective Plan of Bangladesh 2021–2040 aims to eliminate the gender gap in all forms of education (GED, 2020b).

The Haor region is comprised of seven districts: Brahmanbaria, Kishoreganj, Netrokona, Habiganj, Moulvibazar, Sunamganj, and Sylhet. According to the population and housing census (2022), the literacy rates for individuals aged 5 years and older, categorised by sex, are as follows: Brahmanbaria 70.91% (men 70.31%, women 71.42%); Kishoreganj 66.68% (male 66.85%, female 66.53%); Netrokona 65.46% (male 66.47%, female 64.49%); Habiganj 68.36% (male 69.34%, female 67.45%); Moulvibazar 75.02% (male 76.64%, female 73.54%); Sunamganj 63.62% (male 64.66%, female 62.62%); and Sylhet 75.35% (male 77.22%, female 73.55%). In a similar manner, the literacy rates for the population aged 7 years and older, disaggregated by sex, are as follows: Brahmanbaria at 72.12% (men 71.74% and women 72.44%); Kishoreganj at 67.60% (male 67.94% and female 67.29%); Netrokona at 66.25% (male 67.41% and female 65.15%); Habiganj at 69.44% (male 70.63% and female 68.34%); Moulvibazar at 75.85% (male 77.68% and female 74.19%); Sunamganj at 64.92% (male 66.14% and female 63.76%); and Sylhet at 76.43% (male 78.49% and female 74.45%) (BBS, 2023). According to the 2022 population and census data (BBS, 2023), the percentage of individuals aged 15-24 who are not engaged in education within haor regions is as follows: Brahmanbaria at 41.70% (male 20.19%, female 57.32%), Kishoreganj at 37.75% (male 17.16%, female 54.77%), Netrokona at 36.56% (male 15.47%, female 54.40%), Habiganj at 39.14% (male 18.53%, female 56.53%), Moulvibazar at 36.36% (male 17.38%, female 52.36%), Sunamganj at 40.91% (male 21.93%, female 57.90%), and Sylhet at 36.26% (male 19.70%, female 51.63%). An analysis of the 2022 census data indicates that women exhibit lower literacy rates compared to men in the haor regions, along with higher levels of illiteracy.

### 6.2.3 Women in health

Over the past two decades, Bangladesh has achieved notable advancements in the well-being of women and girls, as reported by The Business Standard (2022). The government has prioritised enhancing healthcare and family planning services. There remains a necessity for ongoing initiatives to tackle healthcare challenges and safeguard the health of women in Bangladesh. The Medical Education and Family Welfare Division (MEFWD) oversees initiatives aimed at enhancing access to family planning services, significantly impacting women's reproductive health and overall well-being (GED, 2020a). MEFWD is instrumental in achieving objectives such as a reduction in unintended pregnancies by more than 66% and emphasising the value of safeguarding the reproductive health of young women (GED,

2020a). Community clinics function as accessible resources for women and children in need of services; however, gender-related disparities remain to be addressed (GED, 2020a). The report identifies these gaps and emphasises our dedication to improving access to healthcare for women. The active involvement of women in community support groups and clinic management underscores their critical role in the development of healthcare services (GED, 2020a). Bangladesh has achieved significant progress in decreasing maternal mortality, evidenced by an annual reduction of approximately 5.5% in the maternal mortality rate (MMR). Bangladesh is on track to meet the Millennium Development Goals (MDGs) target of 143 deaths per 100,000 live births by the year 2015. Primary services are provided via community clinics, especially those that support women in rural, marginalised, and vulnerable populations (CRI, 2018). The establishment of model women-friendly district hospitals represents another significant initiative. The Maternal Health Voucher Scheme offers a comprehensive package that includes three antenatal checkups, safe delivery by skilled birth attendants, one postnatal checkup and transport support (CRI, 2018). This initiative significantly benefits women across various socio-economic backgrounds, ensuring their access to essential maternal health services.

Table 9: Maternal Mortality Ratio per 1000 live Births by locality

| Year | National | Rural | Urban |
|---|---|---|---|
| **2011** | 2.09 | 2.15 | 1.96 |
| **2012** | 2.03 | 2.10 | 1.90 |
| **2013** | 1.97 | 2.11 | 1.46 |
| **2014** | 1.93 | 1.96 | 1.82 |
| **2015** | 1.81 | 1.91 | 1.62 |
| **2016** | 1.78 | 1.90 | 1.60 |
| **2017** | 1.72 | 1.82 | 1.57 |
| **2018** | 1.69 | 1.93 | 1.32 |
| **2019** | 1.65 | 1.91 | 1.23 |
| **2020** | 1.63 | 1.78 | 1.38 |

Source: Report on Sample Vital Registration System 2020, BBS

Table 10 presents the life expectancy rates categorised by gender preference for the years 2010–2017. The life expectancy rate for both genders exhibited a gradual increase during the period from 2010 to 2017. In the year 2010, the life expectancy for women was recorded at 68.8 years, while for men, it was noted at 66.6 years. In 2017, the life expectancy for women increased by 4.7 years, while for men, it increased by 4 years.

Table 10: Life expectancy rate by sex during 2010-2017

| Year | Women | Men |
|---|---|---|
| 2010 | 68.8 | 66.6 |
| 2011 | 70.3 | 67.9 |
| 2012 | 70.7 | 68.2 |
| 2013 | 71.2 | 68.8 |
| 2014 | 71.6 | 69.1 |
| 2015 | 72.0 | 69.4 |
| 2016 | 72.9 | 70.3 |
| 2017 | 73.5 | 70.6 |

Source: Bangladesh Sample Vital Statistics 2010-2017, BBS

Health constitutes a primary emphasis within national policies, especially regarding the National Health Programme. These initiatives are designed to decrease child mortality rates, improve maternal health, and address diseases such as HIV/AIDS and malaria. The haor region experiences a range of communicable diseases, notably asthma, peptic ulcers, anaemia, acute respiratory infections, and malaria. Among these, peptic ulcers, diarrhoea, and hypertension are identified as the most prevalent conditions. The incidence of non-communicable diseases is on the rise, including ischaemic heart disease, diabetes, cancer, chronic obstructive pulmonary disease, and mental health issues. A substantial percentage of women in the Haor region, ranging from 62% to 85%, rely on traditional birth attendants for childbirth. Conversely, merely 13.4% of deliveries are performed by qualified personnel. The region demonstrates higher infant mortality rates, with an IMR of 57, and child mortality rates, indicated by a U5MR of 76, both exceeding national averages. Healthcare services are organised into tiers, comprising district hospitals, Upazila health centres, and community clinics. However, there exists a significant deficiency in healthcare personnel, evidenced by a doctor-to-population ratio of 23,304:1, which is considerably higher than the national average. The nurse-to-patient ratios are elevated, highlighting a significant requirement for enhanced healthcare resources in the region.

### 6.2.4 Women in employment

Table 11 presents the demographic distribution of individuals aged 15 and older, categorised by gender and geographic location. The data indicates that the male labour force grew from 42.5 million in 2013 to 43.5 million in 2016–17, whereas the female labour force rose from 18.2 million to 20.0 million during the same period.

Table 11: Labour force 15+ by sex and locality, 2013, 2015-16 & 2016-17

| Period | Rural (Million) | | Urban (Million) | | Total (Million) | |
|---|---|---|---|---|---|---|
| | Women | Men | Women | Men | Women | Men |
| **2013** | 13.1 | 30.5 | 5.1 | 12.0 | 18.2 | 42.5 |
| **2015-2016** | 14.3 | 30.6 | 4.8 | 12.5 | 19.1 | 43.1 |
| **2016-2017** | 15.0 | 30.7 | 5.0 | 12.9 | 20.0 | 43.5 |

Source: Labour Force Survey Bangladesh 2013, 2015-16 & 2016-17, BBS

In towns, male labour force participation increased from 12.0 million in 2013 to 12.9 million in 2016–17. The proportion of women in the labour force remained relatively stable during this period. The male workforce in rural regions increased from 30.5 million in 2013 to 30.7 million in 2016–17. In the year 2013, the number of women was recorded at 13.1 million, which increased to 15.0 million in the period of 2016–17. The BBS has documented a notable rise in female labour force participation, increasing from 36.3% five years prior to 42.68% in 2022 (BBS 2022b). The observed increase can be attributed to the emergence of new entrepreneurs, enhancements in communication, and elevated literacy rates (Tuhin, 2023). Women have significantly contributed to this trend, as numerous individuals joined the workforce following job losses experienced by primary breadwinners (Tuhin, 2023). Improving women's employment is essential for the development of an inclusive society and the promotion of economic growth (GED, 2020b). A study conducted by the World Bank indicates that increasing the percentage of women in the labour force from 33% to 45% could result in an additional percentage point increase in GDP growth (GED, 2020b). To enhance the participation of women in the workforce, a multifaceted approach will be implemented. This approach includes the promotion of growth in labour-intensive industries, the removal of employment barriers, the establishment of necessary infrastructure, the introduction of

affirmative action, direct intervention strategies, and the provision of maternity leave and childcare services (GED, 2020b). During the period of 2018–19, the agriculture sector represented 35.2% of total employment in Bangladesh. Approximately 60% of employed women participated in agricultural production (GED, 2020a). A significant proportion of the workforce in the telecommunications sector consists of unskilled individuals, accounting for 92.5%, while women represent 7% of the total employment in this field. Approximately 80% of the workforce in fish processing plants consists of women, particularly in the Khulna region (GED, 2020b). The Department of Fisheries promotes women's empowerment through the involvement of interested women in fish processing activities (GED, 2020b).

The Bangladesh Bureau of Statistics indicated that urban areas comprised a female labour force of 4.31 million women, of which 4 million were employed. In contrast, rural regions accounted for 21.62 million women, with 20.99 million employed (BBS, 2023). Bangladesh has emerged as a prominent player in the global garments industry, positively impacting rural women, as evidenced by the fact that 80% of women entrepreneurs are succeeding in the e-commerce sector. The empowerment of Information and Communication Technology (ICT) has had a beneficial effect on more than 10 million rural women, with 50,000 individuals having received computer training (Desk, 2023). The government has implemented gender-sensitive budgets and affirmative measures aimed at enhancing women's participation in politics and leadership roles (Desk, 2023). The 2018 MasterCard Index of Women's Entrepreneurs indicated notable advancements in women's employment, with the country achieving over 80 points since 2009. This progress is particularly evident in metrics such as regular employment, female workforce participation, tertiary education enrolment, and the representation of women in leadership positions (MIWE, 2015).

Bangladesh has enacted a range of initiatives aimed at empowering women who are vulnerable and economically disadvantaged. The Vulnerable Group Feeding (VGF) initiative is designed to secure food access for destitute women. Additionally, collateral-free microcredit is offered at a nominal service charge of 5%. Women entrepreneurs are allocated 10% of the Small Enterprise Fund and industrial plots, as reported by CRI in 2018. The ready-made garments sector has provided employment for over 3 million women. Government initiatives have resulted in an increase in women's labour force participation, from 24% in 2010 to 36% in 2013 (CRI, 2018). Gender-sensitive budgets have been implemented in 40 ministries, with a specific allocation of TK 1 billion designated for

women's development in the budgets for 2014–15 (CRI, 2018). Providing support for marginalised and landless farmers, with a demographic composition of 50% women, is essential. The "One House, One Farm Project" is designed to support female-headed households in rural regions with the aim of improving their livelihoods. Between 2010 and 2013, financial incentives were disbursed to more than 57,000 women entrepreneurs (CRI, 2018). JOYEETA represents a government initiative designed to empower rural women by providing business support. The platform facilitates grassroots women entrepreneurs in showcasing and marketing their products, benefiting 180 individuals through 140 stalls (CRI, 2018). The programme additionally provides support for women entrepreneurs who are disabled and marginalised (CRI, 2018). The initiatives demonstrate a systematic strategy for enhancing women's empowerment in Bangladesh. The government's dedication to achieving economic independence and promoting gender equality is demonstrated by initiatives such as the VGF programme, the availability of microcredit, and the support provided to female entrepreneurs. The growth of the RMG sector and the rise in labour force participation indicate the benefits of these initiatives.

The population and housing census report 2022 indicates the unemployment rate among the population aged 15-24, categorised by sex, in haor areas as follows: Brahmanbaria: 43.33% (male: 21.75%, female: 58.61%); Kishoreganj: 39.16% (male: 18.25%, female: 56.47%); Netrakona: 37.95% (male: 16.20%, female: 56.16%); Habiganj: 40.03% (male: 19.09%, female: 57.53%); Moulvibazar: 36.95% (male: 17.77%, female: 53.10%); Sunamganj: 41.54% (male: 22.29%, female: 58.85%); Sylhet: 38.14% (male: 21.67%, female: 53.00%). The analysis of the 2022 census data indicates a higher unemployment rate among women in haor areas compared to men (BBS, 2023).

### 6.2.5 Women in politics

In the year 2022, more than 300 female unions, federations, and community leaders underwent training. A total of 172 women assumed leadership roles in registered unions, while 21 women were elected to leadership positions within worker community associations. The percentage of parliamentary seats occupied by women in Bangladesh was recorded at 21%. Bangladesh has maintained a notable 30-year period with a female prime minister, representing the longest continuous term for a democratically elected female head of government globally (GED, 2020a). Women make up 21% of the Members of Parliament in the Jatiya Sangsad, and the position of Speaker of the National Parliament is held by a

woman. Reserved seats in union parishads, municipalities, and city corporations further ensure women's representation. A legal requirement stipulates that political parties must designate at least 33% of all committee positions for women (GED, 2020a). The objective of the government is to achieve a minimum of 33% female representation in the national parliament by the year 2025 (GED, 2020a).

Table 12: Population participation in National Assembly

| Parliament | Elected in general seat | | No of women elected in reserved seat | No of women seats in national assembly | No. of seats in national assembly | % of women in national assembly |
|---|---|---|---|---|---|---|
| | Women | Men | | | | |
| **1st** | - | 300 | 15 | 15 | 315 | 4.8 |
| **2nd** | 2 | 298 | 30 | 32 | 330 | 9.7 |
| **3rd** | 5 | 295 | 30 | 35 | 330 | 10.6 |
| **4th** | 4 | 296 | 30 | 34 | 330 | 10.3 |
| **5th** | 6 | 294 | 30 | 36 | 330 | 10.9 |
| **6th** | 3 | 297 | 30 | 33 | 330 | 10.0 |
| **7th** | 8 | 292 | 30 | 38 | 330 | 11.5 |
| **8th** | 7 | 293 | 45 | 52 | 345 | 15.1 |
| **9th** | 21 | 279 | 50 | 71 | 350 | 20.3 |
| **10th** | 23 | 277 | 50 | 73 | 350 | 20.9 |
| **11th** | 22 | 278 | 50 | 72 | 350 | 20.6 |

Source: http://www.parliament.gov.bd as on 21.10.2023 at 1.05 am

Bangladesh has achieved significant progress in women's empowerment, as evidenced by the National Parliament's allocation of 50 reserved seats for women, reflecting a 5-seat increase since the previous national election (CRI, 2018). The proportion of women in parliament has increased to 20% following the most recent election. The allocation of reserved seats in local councils, Upazila Parishads, and municipalities has been increased to one-third of the total, facilitating direct elections for these positions (Ibid., 2018). In the recent local government elections, more than 12,000 women were elected as representatives of the populace. In Bangladesh, women occupy significant leadership roles, such as Prime Minister, Leader of

the Opposition, Speaker, and Deputy Leader of the House (Ibid., 2018). The peacekeeping missions of the country incorporate a gender perspective, evidenced by the deployment of 190 female officers from Bangladesh in global peacekeeping operations. The initiatives indicate advancements in the empowerment of women (Ibid., 2018).

Table 13 illustrates the involvement of women in Union Parishads. The data indicates that the participation rate of women in the role of Union Parishad chairmen is notably low, recorded at just 0.7% in 2017. The participation of women in the union council was recorded at 25% in 2017, indicating a significant increase.

Table 13: Women and Men participation in Union Parishad Elections, 2012-2017

| Sex | Chairman | | Member | |
|---|---|---|---|---|
| | Number | % | Number | % |
| | | **2012** | | |
| **Women** | 0 | 0.0 | 13641 | 25.0 |
| **Men** | 4547 | 100.0 | 40923 | 75.0 |
| **Total** | 4547 | 100.0 | 54564 | 100.0 |
| | | **2013** | | |
| **Women** | 0 | 0.0 | 13632 | 25.0 |
| **Men** | 4544 | 100.0 | 40896 | 75.0 |
| **Total** | 4544 | 100.0 | 54528 | 100.0 |
| | | **2014** | | |
| **Women** | 0 | 0.0 | 13650 | 25.0 |
| **Men** | 4550 | 100.0 | 40950 | 75.0 |
| **Total** | 4550 | 100.0 | 54600 | 100.0 |
| | | **2015** | | |
| **Women** | 0 | 0.0 | 13659 | 25.0 |
| **Men** | 4553 | 100.0 | 40977 | 75.0 |
| **Total** | 4553 | 100.0 | 54636 | 100.0 |
| | | **2016** | | |
| **Women** | 31 | 0.7 | 13659 | 25.0 |
| **Men** | 4522 | 99.3 | 40977 | 75.0 |

| | | | | |
|---|---|---|---|---|
| **Total** | 4553 | 100.0 | 54636 | 100.0 |
| | | **2017** | | |
| **Women** | 31 | 0.7 | 13716 | 25.0 |
| **Men** | 4541 | 99.3 | 41148 | 75.0 |
| **Total** | 4572 | 100.0 | 54864 | 100.0 |

Source: Local Government Division, Bangladesh Secretariat

In addition, the Election Commission report from 2015 indicates that the Haor region comprises a total of 36 parliamentary constituencies. In the national parliament election of 2014, there were 36 male parliament members representing haor areas. There are no female members of parliament present in that location. In the eleven and twelve parliamentary elections held in haor areas in 2018 and 2024, respectively two women members of parliament were elected. One representative is from the Kishoreganj Sadar constituency, while the other is from the Derai-Shulla constituency located in Sunamganj (https://www.ecs.gov.bd/files). Following an analysis of the results from 210 haor-based Union Parishads across seven haor districts, specifically Kishoreganj, Netrokona, Brahmanbaria, Sunamganj, Habiganj, Moulvibazar, and Sylhet, the findings indicate that 209 UP chairmen are male, while 1 UP chairperson is identified as female. In that election, 630 women members were elected from the reserved seats. In the most recent UP election, only two women were elected as general UP members, while men secured nearly all available seats, totalling 1888 out of 1890 UP members (https://bangladesh.gov.bd/site/view/union-list).

### 6.2.6 Social status of women

The government and non-governmental organisations are executing microcredit initiatives, providing stipends for girls, and establishing social security, health, and nutrition programmes aimed at women and girls. The objective of these programmes is to tackle the challenges encountered by economically disadvantaged women, who represent a notably vulnerable demographic. As of now, 11.13 million women who are poor, widowed, and in distress are receiving monthly allowances of Tk. 400. The Vulnerable Group Development Programme allocates 30 kg of food grains to 0.75 million women. Additionally, 0.264 million pregnant mothers and children are provided with Tk. 500 per month to support nutrition and food security. Furthermore, 3.00 million elderly individuals are provided with monthly

allowances of Tk 400, while 0.6 million persons with disabilities receive Tk 500 per month (MOWCA, 2014). In the haor region, women are experiencing a financially precarious lifestyle. A significant number of females are experiencing poverty. They are required to perform tasks both at home and in external environments concurrently. Social safety net allowances provide minimal assistance to them. This scenario is commonly observed in the haor region. Women participate in agricultural activities and domestic tasks in exchange for daily wages. Consequently, the social status of women poses considerable challenges in various facets of life.

### 6.2.7 Women in ICT

The Information and Communication Technology Policy 2009 emphasises gender as a cross-cutting theme across various domains (MOWCA, 2014). 20,000 female professionals are engaged in the Basic ICT Literacy Training for Women course. Approximately 9,000 female participants received training through the 'Top UP Foundation Skill Training Course' organised by the ICT division. Approximately 1000 women at the grassroots level received training under the National Mobile Application Development Awareness and Capacity Building Programme. The ‘One Family, One Woman: Empowering Women through ICT’ project aims to enable approximately 20,000 freelancers to transition into entrepreneurship within the ICT service sector. The A2I Programme, initiated by the Prime Minister’s Office, has successfully established 4,547 union digital centres, with women actively participating as entrepreneurs. As part of the Post e-Centre for Rural Community Project, a total of 8,500 rural post offices have undergone digitisation, and around 2,000 women entrepreneurs are actively engaged in these post-e-centres. As part of the 'Thotho Apa' initiative, the government set up information centres in 10 upazilas to facilitate the introduction of ICT. The Ministry of Science and Technology allocated a total of 3044 fellowships to women pursuing master's degrees and scientific research (MOWCA, 2014). In the Haor region, underserved women are receiving ICT services via UDCs. UDCs provide ICT services to underserved women, even though they lack digital literacy and the financial resources to purchase digital devices. A limited number of women and girls are utilising smartphones and other digital devices, particularly among those who are financially privileged.

### 6.2.8 Combating violence against women

The Domestic Violence Prevention and Protection Act of Bangladesh was enacted in 2010 to address issues related to domestic violence and to meet the obligations set forth by CEDAW and the Constitution. In 2013, complementary rules were established to ensure effective implementation (CRI, 2020). The Prevention and Restraint of Human Trafficking Act of 2012 and the Pornography Control Act of 2011 are additional laws aimed at combating violence against women (CRI, 2018). One-stop crisis centres offer comprehensive medical, legal, and policy support, whereas DNA profiling laboratories contribute to investigations of gender-based offences. The Ministry of Women and Children Affairs is responsible for coordinating efforts aimed at preventing violence and operates a helpline that provides legal, medical, and counselling support (CRI, 2018). The government of Bangladesh has emphasised the necessity of addressing poverty and inequality, with particular attention to gender equality and the empowerment of women in its development agenda following 2015 (CRI, 2018). The document delineates four primary objectives: the eradication of violence against women and girls, the empowerment of women in economic spheres, the enhancement of participation in decision-making processes, and the abolition of child marriage. Recent performance data suggests that Bangladesh is on track to meet its objectives for women's empowerment, reflecting a favourable outlook for the nation's future development (CRI, 2018).

The Union Digital Centre has not directly addressed violence against women in underprivileged areas; however, it has been engaged in efforts to prevent such occurrences. Educational initiatives for women are being implemented, and awareness-building banners and wall murals are being exhibited in front of the United Nations. Activists frequently engage in discussions regarding the intentional emergence of initiatives aimed at establishing women's rights and dignity within the community. Despite the gradual increase in violence against women, UDC is demonstrating sufficient performance to retain control in the region. The government has established emergency services such as 999 and 109 to address violence against women; however, a significant lack of awareness regarding these services exists, particularly among economically disadvantaged women (Islam and Sharmin, 2022).

### 6.3 Gender equality

In Bangladesh, women have occupied the highest political positions (GED, 2020b). Bangladesh has achieved significant progress in areas such as female education, infant mortality, maternal mortality, fertility, and credit access. However, these advancements have not been reflected in improvements regarding property rights, inheritance, business entry, access to financial services, government employment, parliamentary representation, local governance, public space accessibility, law enforcement, the legal profession, sports participation, violence against women, reproductive autonomy, fertility preferences, divorce, parental authority, and the implementation of gender-sensitive budgets. The government policy aims to enhance and accelerate advancements in this domain by promoting women's empowerment. Bangladesh is expected to substantially reduce gender discrimination during this perspective plan period (GED, 2020b).

In the Haor region, disparities related to gender persist in the domains of education, employment, and health. The Haor master plan indicates that a significant proportion of women in the Haor region, between 62% and 85%, depend on traditional birth attendants for childbirth services. In contrast, only 13.4% of deliveries are conducted by qualified personnel (Plan, 2012). The 2022 census data indicate notable educational and employment disparities among individuals aged 15-24 in the haor regions of Bangladesh. Principal observations consist of education participation: Brahmanbaria exhibits the highest non-participation rate at 41.70%, characterised by significant gender disparities, with 20.19% of males and 57.32% of females not participating. Other regions, such as Kishoreganj (37.75%) and Sunamganj (40.91%), also exhibit elevated levels of female non-participation. The unemployment rates indicate a higher prevalence among females in all regions. Specifically, Brahmanbaria reports an unemployment rate of 43.33%, with a female unemployment rate of 58.61%. In Sylhet, the overall unemployment rate is 38.14%, with females constituting 53.00% of that figure (BBS, 2023). The impact of digitisation was evident in a study revealing that 60% of participants who underwent computer training reported a reduction in the gender gap. Digitalisation is discussed as a potential barrier or facilitator for gender equality, with initiatives such as A2I aimed at promoting women's empowerment (Islam and Sharmin, 2023). Addressing educational and employment disparities is essential for maximising the benefits of digitisation for women in these regions.

### 6.4 Strategies for women mentioned in the 8th Five-Year Plan

#### 6.4.1 The Department of Cooperatives of the BRDB

The Department of Cooperatives (DOC), BRDB, and other agencies have successfully improved the livelihoods of disadvantaged women through various projects. These efforts have contributed to rural employment and income generation, ultimately leading to a reduction in rural poverty (GED, 2020a). The distribution of crossbred cattle to approximately 22,000 families led to a significant increase in daily milk production, amounting to 90,000 litres. This strategy is expected to generate additional revenue opportunities for women in dairy farming (GED, 2020a).

#### 6.4.2 The Bangabandhu Academy for Poverty Alleviation and Rural Development (BAPARD)

The BAPARD offers training in income-generating enterprises, encompassing both agricultural and non-agricultural activities, aimed at empowering small and marginal female farmers as well as unemployed individuals to achieve self-sufficiency. The courses have provided assistance to a significant number of female trainees over the years (GED, 2020a). Program Amar Bari Amar Khamar, the special programme initiated by the immediate past prime minister is designed to alleviate rural poverty by providing financial assistance to selected agricultural households for the development of homestead farms. There are 55 lakh impoverished families organised under Village Development Organisations (VDO), with rural women expected to contribute to and engage in this initiative (GED, 2020a).

#### 6.4.3 The Sharique Project

The Sharique initiative prioritises the inclusion of disadvantaged women and ethnic minorities in decision-making processes concerning local government, livelihood enhancements, and rural employment. This approach indicates an intention to make decisions that are inclusive and gender-sensitive (GED, 2020a). The Sharique project in Bangladesh focuses on women's rights, gender equality, and women's leadership. It offers training on these issues and empowers disadvantaged women to participate more effectively in local governance (GED, 2020a). The project has created ward platforms, allowing women to voice their opinions and contribute effectively to governance activities (GED, 2020a). Women's participation also contributes to better accountability measures, as their perspectives are

considered in decision-making processes. The project addresses communication skills and accessibility issues by providing information in advance and promoting better communication between citizens, local government officials, and service providers (GED, 2020a). The project's goal is to create a more inclusive, accountable, and effective local governance system in Bangladesh. As women gain confidence and skills through training, their demands for projects, leadership roles, and active participation will evolve, further promoting their inclusion in local governance.

### 6.4.4 The Bangladesh Rural Development Board (BRDB)

BRDB priorities women's empowerment and gender equity as key components of its mandate. This involves initiatives focused on developing youth into skilled workers, promoting women's participation and leadership, and integrating women into dairy production to address nutritional needs (GED, 2020a).

### 6.4.5 The Palli Daridro Bimochon Foundation (PDBF)

The PDBF facilitates women's socioeconomic development by implementing programmes that include training, capital generation, and self-employment initiatives. Rural youth skill development and awareness are prioritised, particularly focusing on poor and vulnerable populations (GED, 2020a).

### 6.4.6 Milk Producers' Cooperative Union Limited

The Milk Producers' Cooperative Union Limited (MilkVita) is dedicated to empowering women by facilitating off-farm activities. This initiative supports women in establishing small businesses and engaging in income-generating activities related to milk and dairy products (GED, 2020a).

### 6.4.7 Cooperative Initiatives

Cooperative efforts, such as the creation of dairy cooperatives and cooperative-based agricultural growth centres, aim to involve women in all aspects of agricultural and livestock production while maintaining gender equality and meeting nutritional needs (GED, 2020a).

### 6.4.8 The Bangladesh Academy for Rural Development (BARD)

BARD emphasises capacity building for rural populations through Union Parishads and village-based organisations, with a particular focus on women. The training workshops aim to enhance women's leadership skills and promote their active participation in local development (GED, 2020a). The 8th Five-Year Plan (8FYP) outlines supporting measures aimed at enhancing non-farm economic activity. These measures are designed to create opportunities for women to participate in a varied rural economy and to elevate their socioeconomic roles.

## 6.5 Status of women in the haor areas

The Haor Basin, located in northeastern Bangladesh, encompasses an area of 19,998 square kilometres, representing 43% of the total land area across the seven administrative districts. In 2020, the population was recorded at 21.38 million. The area remains submerged for more than half of the year, with boats serving as the sole means of transportation (MOWR, 2012a, and Akhter, 2023). The health services in the region exhibit significant deficiencies, characterised by a lack of healthcare facilities, insufficient numbers of medical professionals, inadequate supplies of medications, and ineffective transportation systems for emergency situations. The basin exhibits poverty levels that vary from moderate to very high, particularly within the administrative districts of Kishoreganj, Netrakona, and Sunamganj. The Haor Master Plan Volume 1 outlines the necessity for enhanced health services and upgraded communication systems (BBS, 2016; MOWR, 2012a). The Haor region in Bangladesh exhibits a low literacy rate of 51%, which is below the national average of 57.9%.

Additionally, the region faces a high incidence of water-borne diseases and demonstrates poor indicators related to maternal and child nutrition and health. The CARE Bangladesh Programme Strategy indicates that natural shocks, seasonal food insecurity, and socio-economic and political exploitation contribute to heightened vulnerability for a substantial segment of the population over extended durations throughout the year. Haor is a remote and difficult-to-access agro-economic zone in Bangladesh, characterised by significant vulnerability to food insecurity, natural disasters, and socioeconomic and political exploitation (MACH, 2008). The region exhibits seasonal fluctuations in food availability and pricing as a result of constrained rice harvests. Government services frequently

experience a lack of availability as a result of geographical remoteness and adverse physical conditions. The area exhibits socially conservative characteristics and imposes limitations on women's mobility. The lack of sufficient health service providers and transport facilities adversely affects the entire population, with particular emphasis on children, pregnant women, and the elderly (MACH, 2008). The geographical location of the region increases its vulnerability to disasters. Governance issues impact the effective provision of essential services to disadvantaged populations. The ongoing challenge of addressing poverty in the Haor region persists (MACH, 2008).

### 6.5.1 Population by sex

The average sex ratio in the Haor districts is 99.27 males for every 100 females, which indicates that the male population is smaller than the female population (MOWR, 2012b).

### 6.5.2 Literacy rate

The development of human capital is essential for the growth of the Haor region, with anticipated literacy rates of 63% by 2020 and 75% by 2030. The current literacy rate stands at approximately 45.2% for the overall population, while the Haor districts exhibit an average literacy rate of 38% (MOWR, 2012b). The nation and area have not yet reached full literacy as outlined in the Millennium Development Goals (MDG) and the Outline Perspective Plan (OPP). Education for females holds equal significance to that of males, as it is essential for the development of both family units and society at large. Maulvibazar district exhibits a literacy rate of 72% among women aged 15–24 years, representing the highest percentage in the region. This percentage is followed by Sylhet at 41%, Brahmanbaria at 40%, Habiganj at 37%, Kishoreganj at 37%, Netrakona at 34%, and Sunamganj at 33% (MOWR, 2012b). The seven Haor districts exhibit a school attendance rate of 60–80% for both male and female students.

Table 14: Literacy rate of persons aged 7 years and above by sex and haor districts 2001 & 2011

| Name of District | 2001 | | | 2011 | | |
|---|---|---|---|---|---|---|
| | Both sexes | Male | Female | Both sexes | Male | Female |
| Brahmanbaria | 39.46 | 42.26 | 36.69 | 45.29 | 45.74 | 44.88 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Habiganj | 37.72 | 41.76 | 33.62 | 40.53 | 42.22 | 38.94 |
| Maulvibazar | 42.06 | 45.59 | 38.45 | 51.10 | 52.74 | 49.53 |
| Sunamganj | 34.37 | 38.07 | 30.47 | 34.98 | 36.86 | 33.12 |
| Sylhet | 45.59 | 49.43 | 41.55 | 51.18 | 53.48 | 48.87 |
| Kishoreganj | 38.27 | 41.35 | 35.11 | 40.87 | 41.51 | 40.25 |
| Netrakona | 34.94 | 37.88 | 31.88 | 39.44 | 40.88 | 38.03 |

Source: Population & Housing Census-2011, BBS

The Haor region of Bangladesh presents considerable challenges for women and girls, including flooding, restricted access to healthcare and education, and the prevalence of early marriage, which is frequently perceived as a protective measure against sexual harassment. Furthermore, religious conservatism intensifies gender inequality and discrimination within these communities. Individuals experience elevated levels of malnutrition and maternal mortality; however, they encounter constraints in mobility, economic engagement, and participation in networks. Furthermore, they encounter restricted access to essential services such as healthcare and education as a result of transportation challenges during the flood season (CARE Bangladesh, 2008).

### 6.5.3 Women's participation

The Haor women lack access to communal platforms that would enable them to collectively voice their rights. Women, particularly those who are members of UP, experience significant exclusion from both communal and national decision-making processes. The absence of citizen involvement in local decision-making processes, along with insufficient transparency and accountability in local governance, undermines the efficient and fair provision of services, including social safety nets, to disadvantaged and marginalised populations (Gillingham, 2016).

### 6.5.4 Labour force

Table 15 presents data on the number of employed individuals aged 15 and older, grouped by gender and location. At the aggregate level, the employment rate for women increased at a faster pace compared to that of men. In the year 2013, the number of working women was recorded at 16.8 million. This figure increased to 18.6 million during the period 2016–2017.

The count of employed males increased from 41.2 million to 42.2 million. The number of women employed in the urban area exhibited minimal fluctuation over the observed period. In 2013, the figure stood at 4.5 million, which experienced a slight decline to 4.4 million in 2015-16, followed by an increase to 4.6 million in 2016-17. In 2013, the male workforce was recorded at 11.6 million, which increased to 12.4 million by the period of 2016–17. In rural regions, the rate of women's employment increased at a faster pace compared to that of men's. The employment figures for women rose from 12.3 million in 2013 to 14.1 million in the period of 2016–17. In contrast, the number of employed men increased from 29.6 million in 2013 to 29.8 million in 2016–17.

Table 15: Employed population 15+ by sex and locality 2013, 2015-16 & 2016-17

| Period | Rural (Million) | | Urban (Million) | | Total (Million) | |
|---|---|---|---|---|---|---|
| | Women | Men | Women | Men | Women | Men |
| 2013 | 12.3 | 29.6 | 4.5 | 11.6 | 16.8 | 41.2 |
| 2015-2016 | 13.3 | 29.7 | 4.4 | 12.1 | 17.8 | 41.8 |
| 2016-2017 | 14.1 | 29.8 | 4.6 | 12.4 | 18.6 | 42.2 |

Source: Labour Force Survey Bangladesh 2013, 2015-16 & 2016-17, BBS

Table 16 presents the foreign employment data for both genders in the districts of the Haor region for the period from 2012 to 2017. The quantity of women pursuing employment opportunities abroad is steadily increasing across all districts within the Haor region. In 2012, a total of 1,387 women from Brahmanbaria migrated abroad for employment purposes. This number increased to 5,398 by the year 2017. The number of women in Kishoreganj who left for jobs abroad rose from 1,301 in 2012 to 4,121 in 2017. In the year 2012, a total of 287 women departed from Netrakona for employment opportunities abroad. This number increased significantly to 1,447 by the year 2017. In Sunamganj, the number of women who departed for overseas employment increased from 206 in 2012 to 5051 in 2017. In Sylhet, the number of women departing for work abroad increased from 115 in 2012 to 2035 in 2017. In Moulvibazar, the number of women who departed for overseas employment increased from 225 in 2012 to 3,229 in 2017. In 2012, a total of 885 women from Habiganj migrated abroad for employment, with this number increasing to 6,904 by 2017.

Table 16: Overseas employment by sex and haor region, 2012-2017

| Districts in haor area | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | 2017 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men |
| B.Baria | 1387 | 28880 | 2184 | 18769 | 3516 | 18873 | 4307 | 26351 | 4729 | 39585 | 5398 | 52702 |
| Kishoreganj | 1301 | 11172 | 1924 | 7085 | 2369 | 8783 | 3568 | 13121 | 3982 | 16350 | 4121 | 24278 |
| Netrakona | 287 | 2313 | 586 | 1814 | 805 | 1938 | 1242 | 2367 | 1283 | 3187 | 1447 | 3540 |
| Sunamganj | 206 | 8677 | 507 | 5411 | 1007 | 4300 | 2343 | 5734 | 4034 | 9558 | 5051 | 11960 |
| Sylhet | 115 | 16610 | 312 | 8934 | 666 | 8077 | 980 | 10497 | 1584 | 16933 | 2035 | 23310 |
| Moulvibazar | 225 | 13096 | 595 | 7856 | 1313 | 7103 | 2021 | 8201 | 2692 | 11737 | 3229 | 13408 |
| Habiganj | 885 | 9668 | 2145 | 5171 | 3537 | 4686 | 5280 | 5639 | 6449 | 9804 | 6904 | 12369 |

Source: Gender Statistics of Bangladesh 2018, BBS

The Haor region in northeast Bangladesh encounters obstacles in the empowerment of women, primarily attributed to religious conservatism and entrenched patriarchal social norms. Traditional gender roles impose constraints on women's economic participation, mobility, and decision-making capabilities (CARE Bangladesh, 2008). Women in the region encounter significant workloads, experience food insecurity, suffer from inadequate nutrition, and are subjected to domestic violence. Men frequently rationalise their dominance over women by asserting that they are their primary economic providers. During the annual flood season, women encounter distinct vulnerabilities that restrict their access to essential healthcare services, leading to elevated maternal and infant mortality rates. Adolescent girls frequently encounter challenges related to transportation and health risks during the flood season, which hinders their ability to pursue secondary school education (Gillingham, 2016).

### 6.5.5 Maternal and child nutrition and health

The haor region experiences elevated maternal and infant mortality rates, primarily due to social norms and inadequate sanitation infrastructure, with a significant impact on women and girls. Access to healthcare for women is impeded by the geographical isolation of numerous healthcare communities, resulting in challenges and increased costs associated with reaching healthcare providers. Poor hygiene practices, including the use of contaminated

water for cleaning domestic utensils, contribute to these issues (Gillingham, 2016). In the Haor region, traditional birth attendants are responsible for assisting the majority of women during childbirth, with their involvement ranging from 62% to 85%. In contrast, skilled medical personnel account for an average of only 13.4% of deliveries. The average infant mortality rate (IMR) and child mortality rate (U5MR) in the Haor area significantly exceed the national IMR of 49 and U5MR of 64, as well as the Millennium Development Goal (MDG) targets of an IMR of 32 and a U5MR of 48 (MOWR, 2012a). Social change is occurring regarding the empowerment of women and the recognition of their contributions to the economy. The economic contributions of women within households and communities are gaining recognition in the region, driven in part by the necessity for both male and female labour in a progressively competitive socio-economic landscape. Contemporary communication technologies are facilitating these transformations, and the youth are expected to play a significant role in driving these changes. Employment opportunities must accommodate a significant population increase over the next twenty years, as necessitated by the regional labour market (MOWR, 2012b).

### 6.6 Summary of the chapter

This chapter aims to deliver a comprehensive overview of the status of women within both haor and national contexts. This chapter provides an overview of women's status across various domains, including education, health, political participation, employment, status in society, and the use of information and communication technology (ICT). This chapter discussion is structured around two main aspects: women in the Haor region and women in Bangladesh. The prior discussion indicates that women's advancement is steadily progressing towards development. This chapter identifies that, despite the multidimensional challenges women encounter within their families, workplaces, and communities, men tend to hold a more advantageous position than women in several domains of the human development index. This distinction is particularly evident in areas such as education, health, employment, information and communication technology (ICT), and politics. Women in the Haor region exhibit increased vulnerability and encounter both natural and anthropogenic challenges. Consequently, both government and non-government organisations should collaborate to promote their development.

# CHAPTER SEVEN

# EFFECT OF UDC SERVICES ON HAOR WOMEN: STATUS OF EDUCATION (DATA PRESENTATION AND ANALYSIS)

## 7.0 Introduction

This chapter presents the findings related to union digital services (UDSs) and their effects on women's education in haor regions. The analysis commences with an examination of the economic and social backgrounds of the surveyed individuals, followed by a discussion of the impact of UDS in specific areas. The study examines user perceptions concerning the effect of union digital services on women's education. The analysis examines the relationship between gender identification and the provision of government, information, and commercial services. This chapter outlines the findings derived from chi-square tests and binary logistic regression analyses. The study concurrently presents qualitative findings regarding the impact of UDSs on women's education in the haor region of Bangladesh. The chapter concludes with the presentation of empirical results obtained from the study enquiries.

## 7.1 Socio-economic status of the respondents

The table below illustrates the socio-economic status of the study respondents. The respondents consist of individuals identifying as male and female. The distribution of males and females was 42.4% and 57.6%, respectively. The subsequent tables provide the outcomes of a crosstab analysis, which investigates various socio-economic variables, including age, education, occupation, and income, in relation to the gender identity of the respondents. The subsequent tables present the overall percentage and provide a comparison between male and female respondents.

Table 17 presents the educational attainment of all respondents (N = 720). The distribution is as follows: Primary education accounts for 29% of respondents, with males at 23.9% and females at 32.8%; JSC or equivalent constitutes 13.9%, with males at 9.2% and females at 17.3%; SSC or equivalent represents 17.2%, with males at 14.4% and females at 19.3%; HSC or equivalent comprises 16.4%, with males at 19.0% and females at 14.5%; degree/honours or equivalent makes up 16.5%, with males at 23.3% and females at 11.6%; and finally, masters and above account for 6.9%, with males at 10.2% and females at 4.6%. A chi-square test was conducted to analyse the relationship between the respondents' education profiles

and their gender identities. In conclusion, a statistical association was identified at the 5% significance level between the education status and gender identity of the respondents ($\chi^2$ = 40.296, df = 5, p < 0.001).

Table 17: Crosstab between the education status and gender identity of the respondents

| Gender | Education | | | | | | | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|---|
| | Primary | JSC / Equivalent | SSC/ Equivalent | HSC/ Equivalent | Degree/ Honors/ Equivalent | Masters and above | Total | |
| Male | 23.9* | 9.2 | 14.4 | 19.0 | 23.3 | 10.2 | 100 | <0.001 |
| Female | 32.8 | 17.3 | 19.3 | 14.5 | 11.6 | 4.6 | 100 | |
| Total | 29.0 | 13.9 | 17.2 | 16.4 | 16.5 | 6.9 | 100 | |
| *Row percentage (% within Gender) | | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 18 presents various occupational categories of respondents, which include farmers, fishermen, small-business owners, government employees, students, household (HH) workers, day labourers, unemployed individuals, and others. Regarding occupation, household work represented 35.6% of the respondents, comprising 0.3% male and 61.4% female participants. The demographic distribution includes students at 13.8% (16.4% male, 11.8% female), small businessmen at 12.8% (27.5% male, 1.9% female), government employees at 12.5% (17.4% male, 8.9% female), farmers at 8.9% (17.0% male, 2.9% female), unemployed individuals at 5.4% (4.6% male, 6.0% female), day labourers at 3.8% (4.9% male, 2.9% female), fishermen at 2.9% (6.2% male, 0.5% female), and others at 4.4% (5.6% male, 3.6% female). A chi-square test was conducted to analyse the relationship between the respondents' occupation and their gender identification. In conclusion, a significant statistical association exists between the employment status and gender identification of the respondents, as indicated by a chi-square value of $\chi^2$ = 351.371, with 8 degrees of freedom and a p-value less than 0.001, at a 5% level of significance.

Table 18: Crosstabulation between gender and occupation status of the respondents

| Gender | Occupation | | | | | | | | | | P-value (Chi-square) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Farmer | Fisherman | Small Businessman | Govt. Employee | Student | HH Work | Day labourer | Unemployed | Others | Total | |
| Male | 17.0* | 6.2 | 27.5 | 17.4 | 16.4 | 0.3 | 4.9 | 4.6 | 5.6 | 100 | <0.001 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female | 2.9 | 0.5 | 1.9 | 8.9 | 11.8 | 61.4 | 2.9 | 6.0 | 3.6 | 100 | |
| Total | 8.9 | 2.9 | 12.8 | 12.5 | 13.8 | 35.6 | 3.8 | 5.4 | 4.4 | 100 | |
| *Row percentage (% within Gender) | | | | | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Similarly, table 19 indicates the presence of five income categories among the respondents. The predominant income level among respondents was in the range of 10000–20000 BDT, accounting for 73.3% of the total. Within this group, males constituted 65.6% and females constituted 79.0%. The next significant income bracket was 20001-30000 BDT, representing 20.1% of respondents. Among this group, males accounted for 22.6% and females accounted for 18.3%. The income range of 30001-40000 BDT comprised 6% of respondents, with males representing 10.8% and females representing 2.4%. The income brackets of 40001–50000 BDT and 60000–plus BDT were less prevalent, making up 0.4% and 0.1% of respondents, respectively. Within these groups, males constituted 0.7% and 0.3%, while females accounted for 0.2% and 0.0%, respectively. The connection between the respondents' gender identification and their level of income was examined using a chi-square test. So, we can say that there was a strong link between the respondents' income level and their gender identification, with a 5% significance level ($\chi^2 = 28.872$, df = 4, $p < 0.001$).

Table 19: Crosstabulation between gender and level of income of the respondents

| Gender | Income | | | | | Total | P-value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | 10000-20000 | 20001-30000 | 30001-40000 | 40001-50000 | 60000+ | | |
| Male | 65.6* | 22.6 | 10.8 | 0.7 | 0.3 | 100 | <0.001 |
| Female | 79.0 | 18.3 | 2.4 | 0.2 | 0.0 | 100 | |
| Total | 73.3 | 20.1 | 6.0 | 0.4 | 0.1 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 20 presents data on four distinct age groups identified among the respondents. A total of 51.3% of respondents were aged between 31 and 50 years. Within this group, males represented 50.5% and females represented 51.8%. The subsequent largest demographic comprised respondents aged under 30, accounting for 36.3% of the overall total, with males constituting 35.1% and females 37.1%. The demographic segment aged 51 to 70 represented 10.4% of the total respondents, with male participants making up 11.8% and female

participants accounting for 9.4%. In conclusion, individuals aged 71 and older constituted 2.1% of the overall population, with male respondents representing 2.6% and female respondents representing 1.7%. A chi-square test was conducted to examine the relationship between the age range of respondents and their gender identification. In conclusion, the analysis indicates that there is no significant association, at a 5% level of significance, between the age group of the respondents and their gender identification ($\chi^2 = 28.872$, df = 3, p = 0.578).

Table 20: Crosstabulation between gender and age range of the respondents

| Gender | Age group of the respondents | | | | Total | P-value (Chi-square) |
|---|---|---|---|---|---|---|
| | Below 30 | 31-50 | 51-70 | 71 and above | | |
| Male | 35.1* | 50.5 | 11.8 | 2.6 | 100 | 0.578 |
| Female | 37.1 | 51.8 | 9.4 | 1.7 | 100 | |
| Total | 36.3 | 51.3 | 10.4 | 2.1 | 100 | |
| *Row percentage (% within Gender) | | | | | | |

Source: Field Survey, April 2023 to June 2024

### 7.2 The effect of union digital services on women's education in haor regions

This section discusses the effect of digital services on women, particularly on education in haor areas. UDC services were classified into three categories: government, information, and commercial. Crosstab analysis and the chi-square test were used to find links between respondents' education, occupation, income, and age, as well as the services that UDCs in the Haor region provide. The results are shown in the tables below. Similarly, the investigation exposes the link between independent and dependent variables and concludes whether or not the correlation is accepted.

#### 7.2.1 The respondents' educational status and the government services provided by UDCs

Table 21 states that the government services provided by UDC include both responses and the different educational backgrounds of the respondents. According to the crosstab analysis using row percentages, 92.5% of the 720 respondents utilised the service for birth, death, or citizenship certificates, while 7.5% did not use it. Among the respondents who received this service, their educational status was primary (28.4%), JSC or equivalent (14.3%), SSC or

equivalent (16.8%), HSC or equivalent (16.5%), degree and honours equivalent (17.1%), and masters and above or equivalent (6.9%), respectively. Thereby, the majority of respondents to this service were at the primary level (28.4%), while an insignificant number were at the master's level and above (6.6%). A chi-square test was performed between birth, death, and citizenship certificates and the educational level of respondents. No expected cell frequencies were less than 5. There was no statistically significant relationship between birth, death, and citizenship certificates and the education level of the respondents ($\chi^2 = 5.011$, df = 5, p = 0.415).

Another service is overseas employment, where the total number of respondents was 720; 8.6% of the respondents received this service, and 91.4% of the respondents did not receive it. Among the respondents who took this service, their educational backgrounds were primary (11.3%), JSC or equivalent (14.5%), SSC or equivalent (30.6%), HSC or equivalent (21%), degree and honours or equivalent (17.7%), and masters and above (4.8%), respectively. In this case, the educational status of the majority of respondents was SSC or equivalent (30.6%), while the educational background of the least number of respondents was master's and above (4.8%). A chi-square test was used to compare overseas employment and respondents' educational level. There were no expected cell frequencies that were less than 5. There was a statistically significant association between overseas employment and respondents' educational level ($\chi^2 = 15.831$, df = 5, $p < 0.05$).

Similarly, the next service is a passport or TIN (tax) certificate, where the total number of respondents was 720; particularly, 14.2% of the respondents received this service, whereas 85.8% of the respondents did not. Among the respondents who received this service, their educational status was primary (19.6%), JSC or equivalent (15.7%), SSC or equivalent (22.5%), HSC or equivalent (18.6%), degree and honours or equivalent (16.7%), and master's and above (6.9%), respectively. In this respect, the educational level of the majority of respondents was SSC or equivalent (22.5%), whereas the educational status of the insignificant respondents was master’s and above (6.9%). To compare passports, TIN (tax) certificates, and respondents' educational levels, a chi-square test was used. There was no cell frequencies projected to be less than 5. Passports, TIN (Tax) certificates, and respondents' educational levels had no statistically significant relationship ($\chi^2 = 6.233$, df = 5, p = 0.284). Likewise, livelihood information is another service where the total number of respondents was 720; particularly, 25.3% of the respondents took this service, while 74.7% did not take it.

Among the respondents who took this, their educational background was primary (27.5%), JSC or equivalent (16.5%), SSC or equivalent (23.6%), HSC or equivalent (17%), degree and honours or equivalent (11%), and master's and above (4.4%), respectively. Thereby, the education level of the majority of respondents was primary (27.5%), while the educational level of the insignificant number of respondents was master's and above (4.4%). To compare passports, TIN (tax) certificates, and respondents' educational levels, a chi-square test was used. There was no cell frequencies projected to be less than 5. Passports, TIN (Tax) certificates, and respondents' educational levels had no statistically significant relationship ($\chi^2 = 14.045$, df = 5, p = 0.284).

The land service was received by 22.1% of the total respondents (720), while 77.9% did not receive this service. The educational status of the respondents who obtained this service was primary (30.2%), JSC or equivalent (13.8%), SSC or equivalent (17.6%), HSC or equivalent (19.5%), degree and honours or equivalent (15.1%), and master's and above (3.8%), respectively. In this situation, the important respondents had a primary school education (30.2%), whereas the insignificant respondents had a master's degree or above (3.8%). To compare land and respondents' educational levels, a chi-squared test was used. There were no cell frequencies projected to be less than 5. The relationship between land and educational level was not statistically significant ($\chi^2 = 4.524$, df = 5, p = 0.477).

Among the total respondents (720), 52.2% utilised the VGD or VGF card service, while 47.8% did not use this service. The education background of the respondents who received this service was primary (41.5%), JSC or equivalent (15.7%), SSC or equivalent (17.6%), HSC or equivalent (14.4%), degree and honours or equivalent (9.8%), and master's and above (2.9%), respectively. In this regard, the significant respondents had a primary education (41.5%), while the insignificant respondents had a master's degree or above (2.9%). A chi-square test was used to compare the VGD or VGF card with respondents' educational levels. There were no cell frequencies that were expected to be lower than 5. The VGD or VGF card and educational level had a statistically significant relationship ($\chi^2 = 86.584$, df = 5, $p < 0.05$).

The trade licensing service was used by 22.5% of the total respondents (720), while it was not used by 77.5% of the respondents. Primary (19.8%), JSC or similar (10.5%), SSC or equivalent (25.3%), HSC or equivalent (23.5%), degree or honours or equivalent (17.3%), and master's and above (3.7%) were the educational levels of those who obtained this service.

The most significant responses (25.3%) had an SSC or equivalent, while the least significant (3.7%) earned a master's degree or above. The chi-square test was performed to compare the trade licence with the educational levels of the respondents. There were no cell frequencies projected to be less than 5. The trade licence and educational level were significantly related ($\chi^2 = 25.471$, df = 5, $p < 0.05$). The land recording service was utilised by 23.9% of all respondents (720), whereas it was not used by 76.1%. The educational levels of persons who acquired this service were: primary (36%), JSC or equivalent (11.6%), SSC or equivalent (20.9%), HSC or equivalent (12.8%), degree and honours or equivalent (15.1%), and master's and above (3.5%). The majority of respondents (36%) had a primary school education, while the minority (3.5%) had a master's degree or above. The chi-square test was used to compare land recording with respondents' educational levels. There were no cell frequencies that were expected to be lower than 5. Land recording and educational levels were shown to be highly connected ($\chi^2 = 12.416$, df = 5, $p < 0.05$). 38.2% of all respondents (N = 720) used the various government allowances, but 61.8% did not. Primary (33.5%), JSC or equivalent (14.9%), SSC or comparable (18.5%), HSC or equivalent (17.8%), degree or honours (13.1%), and master's and above (2.2%) were the educational levels of those who obtained this service. The majority of respondents (33.5%) had only completed primary school, while the minority (2.2%) held a master's degree or above. To compare various government allowances with the respondents' educational levels, the chi-square test was used. There were no cell frequencies projected to be less than 5. Various government benefits and educational levels were shown to be closely associated ($\chi^2 = 22.057$, df = 5, $p < 0.05$).

Table 21: The government services offered by UDCs in haor area with its user's education preference.

| Government Services offered by UDCs in Haor area | | Education | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Primary Row N% | JSC/ Equvalent Row N% | SSC/ Equivalent Row N% | HSC/ Equvalent Row N% | Degree/ Honors/ Equvalent Row N% | Masters & Above / Equvalent Row N% | P-Value |
| Birth /death/ citizen certificate | Yes | 28.4 | 14.3 | 16.8 | 16.5 | 17.1 | 6.9 | 0.415 |
| | No | 37.0 | 9.3 | 22.2 | 14.8 | 9.3 | 7.4 | |
| Overseas employment | Yes | 11.3 | 14.5 | 30.6 | 21 | 17.7 | 4.8 | 0.007 |
| | No | 30.7 | 13.8 | 16.0 | 16.0 | 16.4 | 7.1 | |
| Passport/ TIN (tax) certifi cate | Yes | 19.6 | 15.7 | 22.5 | 18.6 | 16.7 | 6.9 | 0.284 |
| | No | 30.6 | 13.6 | 16.3 | 16.0 | 16.5 | 7.0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Livelihood information | Yes | 27.5 | 16.5 | 23.6 | 17.0 | 11.0 | 4.4 | 0.015 |
| | No | 29.6 | 13.0 | 15.1 | 16.2 | 18.4 | 7.8 | |
| Land | Yes | 30.2 | 13.8 | 17.6 | 19.5 | 15.1 | 3.8 | 0.477 |
| | No | 28.7 | 13.9 | 17.1 | 15.5 | 16.9 | 7.8 | |
| VGD/VGF card database | Yes | 41.5 | 15.7 | 15.7 | 14.4 | 9.8 | 2.9 | 0.001 |
| | No | 15.4 | 11.9 | 18.9 | 18.6 | 23.8 | 11.3 | |
| Trade license | Yes | 19.8 | 10.5 | 25.3 | 23.5 | 17.3 | 3.7 | 0.001 |
| | No | 31.7 | 14.9 | 14.9 | 14.3 | 16.3 | 7.9 | |
| Land recording | Yes | 36.0 | 11.6 | 20.9 | 12.8 | 15.1 | 3.5 | 0.030 |
| | No | 26.8 | 14.6 | 16.1 | 17.5 | 17.0 | 8.0 | |
| Various government allowances | Yes | 33.5 | 14.9 | 18.5 | 17.8 | 13.1 | 2.2 | 0.001 |
| | No | 26.3 | 13.3 | 16.4 | 15.5 | 18.7 | 9.9 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.2 The information services offered by UDCs and the education status of the respondents

Table 22 shows two categories of data, including the education status of the respondents and the information services provided by UDCs in the Haor area. 50.6% of the total respondents (N = 720) received the education, admission test, form, and exam result, while the remaining respondents (49.4%) did not receive this service. The respondents who received this service had the following education statuses: primary (13.5%), JSC or equivalent (8.0%), SSC or equivalent (19%), HSC or equivalent (21.2%), degree, honours, or equivalent (26.4%), and master's and above (12.1%), respectively. Based on this result of crosstab analysis, the educational status of the majority of respondents was degree, honours, or equivalent (26.4%), while the education level of the least number of respondents was JSC or equivalent (8%). A chi-square test was performed between education, admission test, form fill-up, exam result, and the respondent's education level. The expected frequency was no less than 5. There was a statistically significant relationship between education, admission test, form fill-up, and exam results and the education status of the respondents ($\chi^2 = 162.749$, df = 5, $p < 0.05$).

Another service is the government form download. 43.3% of the total respondents (N = 720) received this service, but the remaining 56.7% did not. The educational status of the respondents was primary (16.7%), JSC or equivalent (8.7%), SSC or equivalent (18.6%), HSC or equivalent (20.5%), degree, honours, or equivalent (24.7%), and master's and above (10.9%), who received this service. In this regard, the majority of respondents' education level was a degree, honours, or equivalent (24.7%), while the insignificant respondents'

education level was JSC or equivalent (8.7%). To compare the download of government forms with the educational status of the respondents, a chi-square test was used. The expected frequency was no less than 5. There was a statistically significant association between government form downloads and the education status of the respondents ($\chi^2 = 80.683$, df = 5, $p < 0.05$).42.5% of the total respondents (N = 720) received the health service, whereas the remaining respondents (57.5%) did not. The service recipients' educational backgrounds were primary (26.8%), JSC or equivalent (16.7%), SSC or equivalent (19%), HSC or equivalent (15%), degree, honours or equivalent (15%), and master's and above (7.5%), respectively. The education background of the significant respondents was primary (26.8%), while the education background of the insignificant respondents was master's and above. A chi-square test was performed between health and the respondent's education status. The expected frequency was no less than 5. There was not a statistically significant association between health and the respondent's education ($\chi^2 = 6.363$, df = 5, $p = 0.272$).

The next service is agriculture information. 28.9% of the total respondents (N = 720) received the agriculture information, while the remaining respondents (71.1%) did not receive this service. Based on the crosstab analysis of the agriculture information of the respondents who took this service, the education status of the respondents was primary (33.2%), JSC or equivalent (15.9%), SSC or equivalent (13.9%), HSC or equivalent (17.3%), degree, honours or equivalent (13.9%), and master's and above (5.8%), respectively. In this case, the majority of the respondents' education status was primary (33.2%), but the least number of respondents' education was master's and above (5.8%). The chi-square test was used to compare agriculture information with respondents' educational levels. There were no cell frequencies that were expected to be lower than 5. Agricultural information and educational levels did not show any association ($\chi^2 = 6.297$, df = 5, $p = 0.278$).

The next service is law and human rights. 14% of the total respondents (N = 720) participated in the law and human rights service, while the remaining respondents (86%) did not. Based on the crosstab analysis of the law and human rights of the respondents who took this service, their education status was primary (31.7%), JSC or equivalent (16.8%), SSC or equivalent (19.8%), HSC or equivalent (13.9%), degree, honours or equivalent (14.9%), and master's and above (3%), respectively. In this case, the majority of the respondents' education status was primary (31.7%), but the least number of respondents' education was master's and above (3%). The chi-square test was used to compare law and human rights with respondents'

educational levels. There were no cell frequencies that were expected to be lower than 5. Law, human rights, and educational levels did not show any association ($\chi^2 = 4.801$, df = 5, p = 0.441). Tourism is also another service. This service received only 0.6% of the total respondents (N = 720), whereas the rest of the respondents (99.4%) did not take it. For those who took this service, the education level of the respondents was primary (25.1%), JSC or equivalent (25%), SSC or equivalent (50%), HSC or equivalent (0%), degree, honours or equivalent (0%), and master's and above (0%), respectively. In this respect, the education status of the majority of respondents was SSC or equivalent (50%), while the education status of the least number of respondents was HSC or equivalent (0%), degree, honours, or equivalent (0%), and master's or above (0%). A chi-square test was performed between tourism and the respondent's education level. The expected frequency was no less than 5. There was no statistical association between tourism and the education status of the respondents ($\chi^2 = 4.493$, df = 5, p = 0.481).

Environment and disaster management are additional services offered. This service received only 13.6% of the total respondents (N = 720), whereas the rest of the respondents (86.4%) did not take it. For those who took this service, the education level of the respondents was primary (46.9%), JSC or equivalent (13.3%), SSC or equivalent (14.3%), HSC or equivalent (11.2%), degree, honours or equivalent (10.2%), and masters and above (4.1%), respectively. In this respect, the education status of the majority of respondents was primary (46.9%), while the education status of the least number of respondents was master's and above (4.1%). A chi-square test was performed between environment and disaster management and the respondent's education level. The expected frequency was no less than 5. There was a statistically significant relationship between environment and disaster management and the education status of the respondents ($\chi^2 = 19.066$, df = 5, $p < 0.05$).

Table 22: The information services offered by UDCs in haor area with its user's education preference.

| Information services offered by UDCs in Haor area | | Education | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Primary Row N% | JSC/ Equvalent Row N% | SSC/ Equivalent Row N% | HSC/ Equvalent Row N% | Degree/ Honors/ Equvalent Row N% | Masters & Above / Equvalent Row N% | P-Value |
| Education/ admission test & form / exam result | Yes | 13.5 | 8.0 | 19.0 | 21.2 | 26.4 | 12.1 | <0.001 |
| | No | 44.9 | 19.9 | 15.4 | 11.5 | 6.5 | 1.7 | |
| Govt. forms | Yes | 16.7 | 8.7 | 18.6 | 20.5 | 24.7 | 10.9 | <0.001 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| download | No | 38.5 | 17.9 | 16.2 | 13.2 | 10.3 | 3.9 | |
| Health | Yes | 26.8 | 16.7 | 19.0 | 15.0 | 15.0 | 7.5 | 0.272 |
| | No | 30.7 | 11.8 | 15.9 | 17.4 | 17.6 | 6.5 | |
| Agricultural Information | Yes | 33.2 | 15.9 | 13.9 | 17.3 | 13.9 | 5.8 | 0.278 |
| | No | 27.3 | 13.1 | 18.6 | 16.0 | 17.6 | 7.4 | |
| Law and human rights | Yes | 31.7 | 16.8 | 19.8 | 13.9 | 14.9 | 3.0 | 0.441 |
| | No | 28.6 | 13.4 | 16.8 | 16.8 | 16.8 | 7.6 | |
| Tourism | Yes | 25.0 | 25.0 | 50.0 | 0.0 | 0.0 | 0.0 | 0.481 |
| | No | 29.1 | 13.8 | 17.0 | 16.5 | 16.6 | 7.0 | |
| Environment and Disaster management | Yes | 46.9 | 13.3 | 14.3 | 11.2 | 10.2 | 4.1 | 0.002 |
| | No | 26.2 | 14.0 | 17.7 | 17.2 | 17.5 | 7.4 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.3 The commercial services offered by UDCs and the respondent's education status

Table 23 demonstrates the commercial services offered by UDCs in the haor area and the education status of the respondents, with both responses including 'yes' and 'no'. The type of data entry service was taken by 35.4% of the total respondents (N = 720), while the rest of the respondents (64.6%) did not take this service. For the respondents who took this service, their education status was primary (23.5%), JSC or equivalent (13.7%), SSC or equivalent (20.4%), HSC or equivalent (18.8%), degree, honours or equivalent (17.6%), and master's and above (5.9%), respectively. In this case, the majority of respondents had a primary education (23.5%), while only a small number had a master's degree or higher (5.9%). A chi-square test was performed between the type of data entry and the education status of the respondents. The expected cell frequency was no less than 5. There was not a statistically significant relationship between type or data entry and respondents' education status ($\chi^2$ = 8.792, df = 5, p = 0.118).

Printing and photocopying are other commercial services. Printing and photocopying were received by 72.2% of the total respondents (N = 720), whereas the rest of the respondents (27.8%) did not take this service. For those who took it, the education level of the respondents was primary (25%), JSC or equivalent (13.8%), SSC or equivalent (16.7%), HSC or equivalent (17.7%), degree, honours or equivalent (18.5%), and master's and above (8.3%), respectively. In this respect, the education level of the most significant respondents was primary (25%), while the education status of the least significant respondents was master's and above (8.3%). To compare printing and photocopying and the respondents' education status, the chi-square test was used. The expected cell frequency was no less than

5. There was a statistically significant association between printing and photocopying and the respondents' education level ($\chi^2 = 21.634$, df = 5, $p < 0.05$). Email and internet browsing are other commercial services. Email and internet browsing were used by 27.6% of the total respondents (N = 720), whereas the rest (72.4%) did not use these services. For those who took it, the education level of the respondents was primary (21.6%), JSC or equivalent (7.5%), SSC or equivalent (25.1%), HSC or equivalent (21.1%), degree, honours or equivalent (20.1%), and master's and above (4.5%), respectively. In this respect, the education level of the most significant respondents was SSC or equivalent (25.1%), while the education status of the least significant respondents was master's or above (4.5%). To compare email and internet browsing with the respondent's education status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between email and internet browsing and the respondents' education level ($\chi^2 = 31.357$, df = 5, $p < 0.05$).

The CV and job application service was taken by 31.9% of the total respondents (N = 720), while the rest of the respondents (68.1%) did not take this service. For the respondents who took this service, their education status was primary (14.8%), JSC or equivalent (5.2%), SSC or equivalent (17%), HSC or equivalent (20%), degree, honours or equivalent (27.8%), and master's and above (15.2%), respectively. In this case, a significant number of the majority respondents had a degree, honours, or equivalent (27.8%), while an insignificant number had a JSC or equivalent (5.2%). A chi-square test was performed between the CV and job application and the education status of the respondents. The expected cell frequency was no less than 5. There was a statistically significant relationship between the CV and job application and the respondent's education status ($\chi^2 = 104.036$, df = 5, $p < 0.05$).

Computer, ICT, and English training are other commercial services. Computer, ICT, and English training were received by 5.7% of the total respondents (N = 720), whereas the rest (94.3%) did not take this service. For those who took it, the education level of the respondents was primary (7.3%), JSC or equivalent (12.2%), SSC or equivalent (22%), HSC or equivalent (22%), degree, honours or equivalent (31.7%), and master's and above (4.9%), respectively. In this respect, the education level of the most significant respondents was a degree, honours, or equivalent (31.7%), while the education status of the least significant respondents was a master's and above (4.9%). The researchers used the chi-square test to compare respondents' education status with their computer, ICT, and English language

proficiency training. The expected cell frequency was no less than 5. There was a statistically significant association between computer, ICT, and English language proficiency training and the respondents' education level ($\chi^2 = 14.863$, df = 5, $p < 0.05$). Phone calls and video conferencing are also commercial services. 12.2% of the total respondents (N = 720) used the service, while the remaining respondents (87.8%) did not. Among the respondents who received this service, their education level was primary (23.9%), JSC or equivalent (18.2%), SSC or equivalent (22.7%), HSC or equivalent (18.2%), degree, honours, or equivalent (12.5%), and master's and above (4.5%). In this case, the education level of the majority of respondents was primary (23.9%), while the education level of the least majority of respondents was master's and above (4.5%). A chi-square test was performed between phone and video conferencing and respondents' educational status. The expected cell frequency was not less than 5. There was not a statistically significant relationship between phone and video conferencing and the education of respondents ($\chi^2 = 6.027$, df = 5, $p = 0.304$).

Mobile banking, or banking service, is also a commercial service. The service was taken by 27.1% of the total respondents (N = 720), while the rest (72.9%) did not take it. For the respondents who took the service, the education background was primary (24.6%), JSC or equivalent (12.8%), SSC or equivalent (15.9%), HSC or equivalent (19%), degree, honours or equivalent (17.9%), and master's and above (9.7%), respectively. In this regard, the education background of the majority of respondents was primary (24.6%), while the education background of the least majority was master's and above (9.7%). A chi-square test was performed between mobile banking or banking service and respondents' educational status. The expected cell frequency was not less than 5. There was not a statistically significant relationship between mobile banking or banking service and the education of respondents ($\chi^2 = 6.721$, df = 5, $p = 0.242$).

The scanning and laminating are also commercial services provided by UDCs in the Haor area. The service was taken by 46.9% of the total respondents (N = 720), whereas the remaining respondents (53.1%) did not take it. Among respondents who took this service, their education level was primary (23.7%), JSC or equivalent (13%), SSC or equivalent (17.2%), HSC or equivalent (19.2%), degree, honours or equivalent (20.1%), and master's and above (6.8%), respectively. In this regard, the education status of the majority of respondents was primary (23.7%), while the education status of the least majority was master's and above (6.8%). A chi-square test was performed between the scanning and

laminating services and the respondents' educational status. The expected cell frequency was not less than 5. There was a statistically significant relationship between scanning and laminating services and the education of respondents ($\chi^2 = 14.779$, df = 5, $p < 0.05$).

The photography is another commercial service. The photography service was received by 39% of the total respondents (N = 720), whereas the rest of the respondents (61%) did not take this service. For those who took it, the education level of the respondents was primary (28.8%), JSC or equivalent (14.2%), SSC or equivalent (17.4%), HSC or equivalent (17.8%), degree, honours or equivalent (14.2%), and master's and above (7.5%), respectively. In this respect, the education level of the most significant respondents was primary (28.8%), while the education status of the least significant respondents was master's and above (7.5%). To compare photography and respondents' education status, the chi-square test was used. The expected cell frequency was no less than 5. There was not a statistically significant association between photography and the respondents' education level ($\chi^2 = 2.265$, df = 5, $p = 0.811$).

The online visa application, or visa, is another commercial service. The online visa application or visa service was received by only 8.8% of the total respondents (N = 720), whereas the rest of the respondents (91.2%) did not take this service. For those who took it, the education level of the respondents was primary (20.6%), JSC or equivalent (23.8%), SSC or equivalent (27%), HSC or equivalent (12.7%), degree, honours or equivalent (12.7%), and master's and above (3.2%), respectively. In this respect, the education level of the most significant respondents was SSC or equivalent (27%), while the education status of the least significant respondents was master's and above (3.2%). To compare online visa applications and respondents' education status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between online visa applications and the respondents' education level ($\chi^2 = 12.987$, df = 5, $p < 0.05$).

The e-tickets for air, bus, and rail are another commercial service. The e-tickets for air, bus, and rail service were received by only 20.6% of the total respondents (N = 720), whereas the rest of the respondents (79.4%) did not take this service. For those who took it, the education level of the respondents was primary (23%), JSC or equivalent (8.1%), SSC or equivalent (25.7%), HSC or equivalent (20.3%), degree, honours or equivalent (17.6%), and master's and above (5.4%), respectively. In this respect, the education level of the most significant respondents was SSC or equivalent (25.7%), while the education status of the least significant

respondents was master's or above (5.4%). The researchers used the chi-square test to compare e-tickets for air, bus, and rail with the respondents' education status. The expected cell frequency was no less than 5. There was a statistically significant association between e-tickets for air, bus, and rail and the respondents' education level ($\chi^2 = 17.035$, df = 5, $p < 0.05$).

Insurance services are another commercial service. The insurance services were received by only 13.2% of the total respondents (N = 720), whereas the rest of the respondents (86.8%) did not take them. For those who took it, the education level of the respondents was primary (29.5%), JSC or equivalent (7.4%), SSC or equivalent (17.9%), HSC or equivalent (23.2%), degree, honours or equivalent (20%), and master's and above (2.1%), respectively. In this respect, the education level of the most significant respondents was primary (29.5%), while the education status of the least significant respondents was master's and above (2.1%). To compare insurance services and respondents' education status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between insurance services and the respondents' education level ($\chi^2 = 10.935$, df = 5, $p < 0.05$).

Science and technology are another commercial service. The science and technology service were received by only 11.5% of the total respondents (N = 720), whereas the rest (88.5%) did not take it. For those who took it, the education level of the respondents was primary (48.2%), JSC or equivalent (13.3%), SSC or equivalent (10.8%), HSC or equivalent (6%), degree, honours or equivalent (18.1%), and master's and above (3.6%), respectively. In this respect, the education level of the most significant respondents was primary (48.2%), while the education status of the least significant respondents was master's and above (3.6%). To compare insurance services and respondents' education status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between science and technology and the respondents' education level ($\chi^2 = 21.897$, df = 5, $p < 0.05$).

Industry and commerce are categorised as additional types of commercial services. The industry and commerce service were received by only 10.6% of the total respondents (N = 720), whereas the rest of the respondents (89.4%) did not receive it. For those who took it, the education level of the respondents was primary (21.1%), JSC or equivalent (17.1%), SSC or equivalent (23.7%), HSC or equivalent (21.1%), degree, honours or equivalent (13.2%),

and master's and above (3.9%), respectively. In this respect, the education level of the most significant respondents was SSC or equivalent (23.7%), while the education status of the least significant respondents was master's and above (3.9%). To compare industry and commerce and respondents' education status, the chi-square test was used. The expected cell frequency was no less than 5. There was not a statistically significant association between industry and commerce and the respondents' education level ($\chi^2 = 7.365$, df = 5, p = 0.195).

Table 23: The commercial services offered by UDCs in Haor area with the status of education of the respondents

| Commercial services offered by UDCs in Haor area | | Education | | | | | | P-Value |
|---|---|---|---|---|---|---|---|---|
| | | Primary Row N% | JSC/ Equvalent Row N% | SSC/ Equivalent Row N% | HSC/ Equvalent Row N% | Degree/ Honors/ Equvalent Row N% | Masters & Above / Equvalent Row N% | |
| Type/Data entry | Yes | 23.5 | 13.7 | 20.4 | 18.8 | 17.6 | 5.9 | 0.118 |
| | No | 32.0 | 14.0 | 15.5 | 15.1 | 15.9 | 7.5 | |
| Printing and Photocopying | Yes | 25.0 | 13.8 | 16.7 | 17.7 | 18.5 | 8.3 | 0.001 |
| | No | 39.5 | 14.0 | 18.5 | 13.0 | 11.5 | 3.5 | |
| E-mail and Internet browsing | Yes | 21.6 | 7.5 | 25.1 | 21.1 | 20.1 | 4.5 | <0.001 |
| | No | 31.9 | 16.3 | 14.2 | 14.6 | 15.2 | 7.9 | |
| CV and Job application | Yes | 14.8 | 5.2 | 17.0 | 20.0 | 27.8 | 15.2 | <0.001 |
| | No | 35.7 | 18.0 | 17.3 | 14.7 | 11.2 | 3.1 | |
| Computer/ICT/English Training | Yes | 7.3 | 12.2 | 22.0 | 22.0 | 31.7 | 4.9 | 0.011 |
| | No | 30.3 | 14.0 | 16.9 | 16.1 | 15.6 | 7.1 | |
| Phone/Video Conferencing | Yes | 23.9 | 18.2 | 22.7 | 18.2 | 12.5 | 4.5 | 0.304 |
| | No | 29.7 | 13.3 | 16.5 | 16.1 | 17.1 | 7.3 | |
| Mobile Banking / Bank | Yes | 24.6 | 12.8 | 15.9 | 19.0 | 17.9 | 9.7 | 0.242 |
| | No | 30.7 | 14.3 | 17.7 | 15.4 | 16.0 | 5.9 | |
| Scanning & Laminating | Yes | 23.7 | 13.0 | 17.2 | 19.2 | 20.1 | 6.8 | 0.011 |
| | No | 33.8 | 14.7 | 17.3 | 13.9 | 13.4 | 7.1 | |
| Photography | Yes | 28.8 | 14.2 | 17.4 | 17.8 | 14.2 | 7.5 | 0.811 |
| | No | 29.2 | 13.7 | 17.1 | 15.5 | 18.0 | 6.6 | |
| Online Visa application / visa | Yes | 20.6 | 23.8 | 27.0 | 12.7 | 12.7 | 3.2 | 0.023 |
| | No | 29.8 | 12.9 | 16.3 | 16.7 | 16.9 | 7.3 | |
| E-tickets for air/bus/rail | Yes | 23.0 | 8.1 | 25.7 | 20.3 | 17.6 | 5.4 | 0.004 |
| | No | 30.6 | 15.4 | 15.0 | 15.4 | 16.3 | 7.3 | |
| Insurance services | Yes | 29.5 | 7.4 | 17.9 | 23.2 | 20.0 | 2.1 | 0.053 |
| | No | 29.0 | 14.9 | 17.1 | 15.4 | 16.0 | 7.7 | |
| Science and technology | Yes | 48.2 | 13.3 | 10.8 | 6.0 | 18.1 | 3.6 | 0.001 |
| | No | 26.5 | 14.0 | 18.1 | 17.7 | 16.3 | 7.4 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Industry and commerce | Yes | 21.1 | 17.1 | 23.7 | 21.1 | 13.2 | 3.9 | 0.195 |
| | No | 30.0 | 13.5 | 16.5 | 15.8 | 16.9 | 7.3 | |

Source: Field Survey, April 2023 to June 2024.

### 7.2.4 The government services provided by UDCs and respondent's occupation status

Table 24 indicates that the government services offered by UDC encompass both the responses received and the various occupational backgrounds of the respondents. The crosstab analysis using row percentages shows that, out of a total of 720 respondents, 92.5% utilised the service to obtain a birth, death, or citizenship certificate, while 7.5% did not use this service. The occupation status of the respondents who used this service is as follows: farmer (9.2%), fisherman (3.0%), small businessman (12.2%), government employee (12.6%), student (14.3%), engaged in household work (36.2%), day labourer (3.9%), unemployed (5%), and others (3.5%). The majority of respondents to this service were household (HH) workers, comprising 36.2% of the total, while a negligible percentage were fishermen, accounting for 3.0%. A chi-square test was conducted to analyse the relationship between birth, death, and citizenship certificates and the occupation levels of respondents. All expected cell frequencies met or exceeded the threshold of 5. A statistically significant relationship was observed between birth, death, and citizenship certificates and the occupation of the respondents ($\chi^2 = 19.969$, $df = 8$, $p < 0.05$).

Another service pertains to overseas employment, with a total respondent count of 720. Of these, 8.6% used this service, and 91.4% did not engage with it. The occupation status of the respondents who used this service is as follows: farmer (4.8%), fisherman (4.8%), small businessman (8.1%), government employee (11.3%), student (21%), household work (35.5%), day labourer (3.2%), unemployed (3.2%), and others (8.1%). The occupation status of the majority of respondents was household (HH) work, accounting for 35.5%. In contrast, the occupation backgrounds with the least representation among respondents were day labourer and unemployed, both at 3.2%. A chi-square test was conducted to analyse the relationship between overseas employment and the occupation levels of respondents. No expected cell frequencies were below 5. The analysis revealed no statistically significant association between overseas employment and the occupation level of respondents ($\chi^2 = 8.592$, $df = 8$, $p = 0.378$).

The subsequent service examined is the passport or TIN (tax) certificate, which had a total of 720 respondents. Of these, 14.2% used this service, whereas 85.8% did not. The occupation

status of the respondents who received this service is as follows: farmer (12.7%), fisherman (5.9%), small businessman (22.5%), government employee (11.8%), student (14.7%), household work (22.5%), day labourer (4.9%), unemployed (2.0%), and others (2.9%). The occupation status of the majority of respondents was categorised as household (HH) work at 22.5% and small business at 22.5%. Conversely, the occupation background with the least representation was unemployment, accounting for 2% of respondents. A chi-square test was employed to compare passports, TIN (tax) certificates, and the occupational statuses of respondents. No cell frequencies were projected to be below 5. The analysis revealed a statistically significant relationship between passports, TIN (Tax) certificates, and respondents' occupation status, with a chi-square value of 23.880, degrees of freedom equal to 8, and a p-value less than 0.05.

In the same manner, livelihood information represents an additional service with a total respondent count of 720. Specifically, 25.3% of respondents used this service, whereas 74.7% did not engage with it. The occupation status of the respondents who received this service is as follows: farmer (17.6%), fisherman (5.5%), small businessman (12.6%), government employee (8.8%), student (14.8%), household (HH) work (22.5%), day labourer (6%), unemployed (7.1%), and others (4.9%). The occupation status of the majority of respondents was household (HH) work, comprising 22.5% of the total. Conversely, the category with the least representation was 'others', accounting for 4.9% of respondents. A chi-square test was employed to compare livelihood information and the occupational status of respondents. No cell frequencies were projected to be below 5. The analysis indicated a statistically significant relationship between livelihood information and respondents' occupation status, with a chi-square value of 45.674, degrees of freedom equal to 8, and a p-value less than 0.05.

A total of 22.1% of respondents (N = 720) reported receiving the land service, whereas 77.9% did not receive it. The occupation status of the respondents who received this service is as follows: farmer (18.9%), fisherman (7.5%), small businessman (20.8%), government employee (14.5%), student (7.5%), household work (17%), day labourer (5.7%), unemployed (1.9%), and others (6.3%). The occupation status of the majority of respondents was small business, accounting for 20.8%, whereas the occupation background of the fewest respondents was unemployed, representing 1.9%. A chi-square test was employed to compare land and the occupation status of respondents. No cell frequencies were projected to be below 5. The association between land and occupation status demonstrated statistical significance

($\chi^2 = 82.409$, df = 8, $p < 0.05$). Of the total respondents (N = 720), 52.2% reported utilising the VGD or VGF card service, whereas 47.8% indicated that they did not use it. The occupational statuses of the respondents who received this service were categorised as follows: The occupation statuses of the respondents who received this service were as follows: farmer (11.2%), fisherman (4.8%), small businessman (8.2%), government employee (6.1%), student (10.4%), household (HH) work (45.2%), day labourer (5.9%), unemployed (5.1%), and others (3.2%). The occupation status of the majority of respondents was household (HH) work, comprising 45.2% of the total. Conversely, the category with the least representation was 'others', accounting for 3.2% of respondents. A chi-squared test was conducted to analyse the relationship between the VGD or VGF card service and the respondents' occupation status. No cell frequencies were anticipated to fall below 5. The VGD or VGF card and occupation status exhibited a statistically significant relationship, as indicated by $\chi^2 = 91.763$, df = 8, $p < 0.05$.

A total of 22.5% of respondents (N = 720) received the trade licensing service, whereas 77.5% did not receive it. The occupation status of the respondents who received this service includes the following: farmer (4.3%), fisherman (4.9%), small businessman (32.7%), government employee (7.4%), student (14.2%), household work (23.5%), day labourer (6.2%), unemployed (2.5%), and others (4.3%). The majority of respondents identified as small businessmen, accounting for 32.7% of the total, whereas the least represented occupation among respondents was unemployment, comprising 2.5%. A chi-squared test was conducted to analyse the relationship between trade licenses and the occupational status of the respondents. No cell frequencies were projected to be below 5. The trade licence exhibited a significant relationship with occupation status ($\chi^2 = 92.474$, df = 8, $p < 0.05$).

A total of 23.9% of all respondents (N = 720) utilised the land recording service, while 76.1% did not use it. The occupation status of the respondents who received this service is as follows: farmer (16.3%), fisherman (7.6%), small businessman (17.4%), government employee (8.1%), student (12.2%), household work (20.3%), day labourer (10.5%), unemployed (3.5%), and others (4.1%). The occupation status of the majority of respondents was household (HH) work, accounting for 20.3%, whereas the occupation background with the least representation was categorised as 'others', comprising 4.1% of the respondents. The chi-square test was employed to analyse the relationship between land recordings and the occupation status of respondents. No cell frequencies were anticipated to fall below 5. The

relationship between land recording and occupation status was found to be statistically significant ($\chi^2 = 81.746$, df = 8, $p < 0.05$).

A total of 38.2% of respondents (N = 720) used the various government allowances, while 61.8% did not engage with them. The occupation status of the respondents who received this service is as follows: farmer (10.9%), fisherman (5.5%), small businessman (11.3%), government employee (8%), student (12%), engaged in household work (36%), day labourer (7.6%), unemployed (5.8%), and others (2.9%). The occupation status of the majority of respondents was household (HH) work, accounting for 36%, whereas the category with the least representation was others, comprising 2.9% of respondents. The chi-square test was employed to compare different government allowances in relation to the respondents' occupation status. No cell frequencies were projected to be below 5. The analysis revealed a significant association between various government benefits and occupation status ($\chi^2 = 41.294$, df = 8, $p < 0.05$).

Table 24: The government services offered by UDCs in haor area with considering occupation

| Government services offered by UDCs | | Occupation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Farmer Row N% | Fisherman Row N% | Small Businessman Row N% | Govt. Employee Row N% | Student Row N% | HH Work Row N% | Day labourer Row N% | Unemployed Row N% | Others Row N% | P-Value |
| Birth /death/ citizen certificate | Yes | 9.2 | 3.0 | 12.2 | 12.6 | 14.3 | 36.2 | 3.9 | 5.0 | 3.8 | 0.010 |
| | No | 5.6 | 1.9 | 20.4 | 11.1 | 7.4 | 27.8 | 1.9 | 11.1 | 13.0 | |
| Overseas employment | Yes | 4.8 | 4.8 | 8.1 | 11.3 | 21.0 | 35.5 | 3.2 | 3.2 | 8.1 | 0.378 |
| | No | 9.3 | 2.7 | 13.2 | 12.6 | 13.1 | 35.6 | 3.8 | 5.6 | 4.1 | |
| Passport/ TIN (tax) certifi cate | Yes | 12.7 | 5.9 | 22.5 | 11.8 | 14.7 | 22.5 | 4.9 | 2.0 | 2.9 | 0.002 |
| | No | 8.3 | 2.4 | 11.2 | 12.6 | 13.6 | 37.7 | 3.6 | 6.0 | 4.7 | |
| Livelihood information | Yes | 17.6 | 5.5 | 12.6 | 8.8 | 14.8 | 22.5 | 6.0 | 7.1 | 4.9 | <0.001 |
| | No | 5.9 | 2.0 | 12.8 | 13.8 | 13.4 | 40.0 | 3.0 | 4.8 | 4.3 | |
| Land | Yes | 18.9 | 7.5 | 20.8 | 14.5 | 7.5 | 17.0 | 5.7 | 1.9 | 6.3 | <0.001 |
| | No | 6.1 | 1.6 | 10.5 | 11.9 | 15.5 | 40.8 | 3.2 | 6.4 | 3.9 | |
| VGD/VGF card database | Yes | 11.2 | 4.8 | 8.2 | 6.1 | 10.4 | 45.2 | 5.9 | 5.1 | 3.2 | <0.001 |
| | No | 6.4 | 0.9 | 17.7 | 19.5 | 17.4 | 25.0 | 1.5 | 5.8 | 5.8 | |
| Trade license | Yes | 4.3 | 4.9 | 32.7 | 7.4 | 14.2 | 23.5 | 6.2 | 2.5 | 4.3 | <0.001 |
| | No | 10.2 | 2.3 | 7.0 | 14.0 | 13.6 | 39.1 | 3.0 | 6.3 | 4.5 | |
| Land recording | Yes | 16.3 | 7.6 | 17.4 | 8.1 | 12.2 | 20.3 | 10.5 | 3.5 | 4.1 | <0.001 |
| | No | 6.6 | 1.5 | 11.3 | 13.9 | 14.2 | 40.3 | 1.6 | 6.0 | 4.6 | |
| Various government allowances | Yes | 10.9 | 5.5 | 11.3 | 8.0 | 12.0 | 36.0 | 7.6 | 5.8 | 2.9 | <0.001 |
| | No | 7.6 | 1.3 | 13.7 | 15.3 | 14.8 | 35.3 | 1.3 | 5.2 | 5.4 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.5 The information services offered by UDCs and the respondent's occupation status

Table 25 presents two categories of data: the occupational status of respondents and the information services offered by UDCs in the Haor area. A total of 50.6% of respondents (N = 720) participated in the education, admissions test, form, and exam results, whereas 49.4% did not utilise this service. The respondents utilising this service exhibited the following occupational statuses: farmer (4.4%), fisherman (2.5%), small businessman (11.5%), government employee (20.6%), student (23.6%), household work (22.5%), day labourer (4.1%), unemployed (7.7%), and others (3%), respectively. The crosstab analysis indicates that the predominant occupation status among respondents was student, comprising 23.6% of the total, whereas the occupation status with the fewest respondents was fisherman, accounting for 2.5%. A chi-square test was conducted to analyse the relationship between education, admission test, form fill-up, exam results, and the respondent's occupation status. The anticipated frequency was a minimum of 5. A statistically significant relationship was observed between education, admission test, form fill-up, and exam results in relation to the occupation status of the respondents ($\chi^2 = 154.814$, df = 8, $p < 0.05$).

A supplementary service offered is the download of government forms. A total of 43.3% of respondents (N = 720) reported receiving this service, while 56.7% did not receive it. The individuals who participated in this service exhibited the following occupational statuses: the individuals participating in this service reported the following occupational statuses: farmer (5.4%), fisherman (3.2%), small businessman (12.8%), government employee (22.1%), student (18.6%), engaged in household work (20.5%), day labourer (4.5%), unemployed (8.7%), and other occupations (4.2%). The crosstab analysis indicates that the predominant occupation status among respondents was government employee, comprising 22.1% of the total. Conversely, the occupation status with the lowest representation was fisherman, accounting for 3.2% of respondents. A chi-square test was conducted to analyse the relationship between the government form download and the respondent's occupational status. The anticipated frequency was a minimum of 5. A statistically significant relationship was observed between the form of government download and the occupational status of the respondents ($\chi^2 = 104.178$, df = 8, $p < 0.05$).

A total of 42.5% of respondents (N = 720) used the health service, while 57.5% did not access it. The respondents utilising this service exhibited the following occupational statuses: farmer (10.5%), fisherman (2.9%), small businessman (12.7%), government employee

(14.4%), student (11.4%), household work (37.3%), day labourer (3.3%), unemployed (3.9%), and others (3.9%), respectively. The crosstab analysis indicates that the predominant occupation status among respondents was household work, accounting for 37.3%. Conversely, the occupation status with the lowest representation was fisherman, comprising 2.9% of respondents. A chi-squared test was conducted to analyse the relationship between health and the respondent's occupation status. The anticipated frequency was a minimum of 5. The analysis revealed no statistically significant association between health and the occupation of the respondents ($\chi^2 = 9.397$, df = 8, p = 0.310).

The subsequent service pertains to agricultural information. A total of 28.9% of respondents (N = 720) used the agriculture information service, whereas 71.1% did not engage with it. The crosstab analysis of the agricultural information provided by the respondents who utilised this service indicates the following education status distribution: farmer (19.2%), fisherman (6.7%), small businessman (15.9%), government employee (13.1%), student (11.1%), household work (18.3%), day labourer (5.8%), unemployed (6.7%), and others (3.4%). The crosstab analysis indicates that the predominant occupation status among respondents was farmer, accounting for 19.2% of the total. Conversely, the category with the fewest respondents was 'others', which represented 3.4%. A chi-square test was employed to analyse the relationship between agricultural information and the educational levels of respondents. No cell frequencies were anticipated to fall below 5. A statistically significant association was observed between agricultural information and occupational status ($\chi^2 = 83.023$, df = 8, $p < 0.05$).

The subsequent service pertains to law and human rights. A total of 14% of respondents (N = 720) utilised the law and human rights service, whereas 86% did not engage with this service. The crosstab analysis of the law and human rights concerning the respondents who used this service indicates the following occupation statuses: farmer (18.8%), fisherman (8.9%), small businessman (14.9%), government employee (7.9%), student (13.9%), household worker (21.8%), day labourer (7.9%), unemployed (3%), and others (3%). Household work engaged the majority of respondents, accounting for 21.8% of the total. Conversely, the least represented occupations were unemployment and others, each comprising 3% of the respondents. The chi-square test was employed to analyse the relationship between law and human rights in relation to the respondents' occupational status. No cell frequencies were anticipated to fall below 5. The relationship between law, human rights, and occupation status demonstrates a statistically significant association, with a chi-square value of 43.444, degrees

of freedom equal to 8, and a p-value less than 0.05. Tourism constitutes an additional service sector. Only 0.6% of the total respondents (N = 720) utilised the service, while 99.4% did not engage with it. The occupation status of the respondents who used this service was as follows: farmer (0%), fisherman (0%), small businessman (25%), government employee (0%), student (0%), household worker (0%), day labourer (0%), unemployed (75%), and others (0%). The majority of respondents reported being unemployed, accounting for 75% of the total. Conversely, no respondents were identified as farmers, fishermen, government employees, students, engaged in household work, day labourers, or in any other occupation, each representing 0% of the sample. A chi-square test was conducted to analyse the relationship between tourism and the occupational status of the respondents. The anticipated frequency was a minimum of 5. A statistical association was identified between tourism and the occupational status of the respondents ($\chi^2 = 39.716$, df = 8, $p < 0.05$).

Environment and disaster management constitute additional services. The service was utilised by 13.6% of the total respondents (N = 720), while 86.4% of the respondents did not participate. The occupation status of the respondents who utilised this service is as follows: farmer (29.6%), fisherman (9.2%), small businessman (13.3%), government employee (9.2%), student (11.2%), household work (3.1%), day labourer (8.2%), unemployed (12.2%), and others (4.1%). The majority of respondents identified their occupation as farmers, accounting for 29.6% of the total. Conversely, the occupation with the least representation among respondents was household work, comprising only 3.1%. A chi-squared test was conducted to analyse the relationship between the environment and disaster management in relation to the respondents' occupation status. The anticipated frequency of cells was not less than 5. A statistically significant relationship was observed between the environment and disaster management in relation to the occupation status of the respondents ($\chi^2 = 120.899$, df = 8, $p < 0.05$).

Table 25: The information services offered by UDCs in haor area with considering occupation

| Information services offered by UDCs | | Occupation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Farmer Row N% | Fisherman Row N% | Small Businessman Row N% | Govt. Employee Row N% | Student Row N% | HH Work Row N% | Day labourer Row N% | Unemployed Row N% | Others Row N% | P-Value |
| Education/ admission test & form / exam result | Yes | 4.4 | 2.5 | 11.5 | 20.6 | 23.6 | 22.5 | 4.1 | 7.7 | 3.0 | <0.001 |
| | No | 13.5 | 3.4 | 14.0 | 4.2 | 3.7 | 48.9 | 3.4 | 3.1 | 5.9 | |
| Govt. forms download | Yes | 5.4 | 3.2 | 12.8 | 22.1 | 18.6 | 20.5 | 4.5 | 8.7 | 4.2 | <0.001 |
| | No | 11.5 | 2.7 | 12.7 | 5.1 | 10.0 | 47.1 | 3.2 | 2.9 | 4.7 | |
| Health | Yes | 10.5 | 2.9 | 12.7 | 14.4 | 11.4 | 37.3 | 3.3 | 3.9 | 3.9 | 0.310 |
| | No | 7.7 | 2.9 | 12.8 | 11.1 | 15.5 | 34.3 | 4.1 | 6.8 | 4.8 | |
| Agricultural Information | Yes | 19.2 | 6.7 | 15.9 | 13.0 | 11.1 | 18.3 | 5.8 | 6.7 | 3.4 | <0.001 |
| | No | 4.7 | 1.4 | 11.5 | 12.3 | 14.8 | 42.6 | 2.9 | 4.9 | 4.9 | |
| Law and human rights | Yes | 18.8 | 8.9 | 14.9 | 7.9 | 13.9 | 21.8 | 7.9 | 3.0 | 3.0 | <0.001 |
| | No | 7.3 | 1.9 | 12.4 | 13.2 | 13.7 | 37.8 | 3.1 | 5.8 | 4.7 | |
| Tourism | Yes | 0.0 | 0.0 | 25.0 | 0.0 | 0.0 | 0.0 | 0.0 | 75.0 | 0.0 | <0.001 |
| | No | 8.9 | 2.9 | 12.7 | 12.6 | 13.8 | 35.8 | 3.8 | 5.0 | 4.5 | |
| Environment and Disaster management | Yes | 29.6 | 9.2 | 13.3 | 9.2 | 11.2 | 3.1 | 8.2 | 12.2 | 4.1 | <0.001 |
| | No | 5.6 | 1.9 | 12.7 | 13.0 | 14.1 | 40.7 | 3.1 | 4.3 | 4.5 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.6 **The commercial services offered by UDCs and respondent's occupation status**

Table 26 demonstrates the commercial services offered by UDCs in the haor area and the occupation status of the respondents, with both responses including 'yes' and 'no'. The type of data entry service was taken by 35.4% of the total respondents (N = 720), while the rest of the respondents (64.6%) did not take this service. The respondents who took this service had the following occupation statuses: farmer (7.5%), fisherman (3.5%), small businessman (11.4%), government employee (12.9%), student (17.3%), HH work (32.9%), day labourer (5.5%), unemployed (5.9%), and others (3.1%), respectively. In this case, the majority of respondents were engaged in HH work (32.9%), while a small number of respondents identified as others (3.1%). A chi-square test was performed between the type of data entry and the occupation status of the respondents. The expected cell frequency was no less than 5. There was not a statistically significant relationship between type or data entry and respondents' occupation status ($\chi^2 = 11.249$, df = 8, p = 0.188).

Printing and photocopying are other commercial services. Printing and photocopying were received by 72.2% of the total respondents (N = 720), whereas the rest of the respondents (27.8%) did not take advantage of this service. For those who took it, the occupation status of the respondents was farmer (7.9%), fisherman (3.3%), small businessman (12.9%), government employee (14%), student (15.6%), HH work (32.9%), day labourer (4.8%), unemployed (5.4%), and others (3.3%), respectively. In this respect, the occupation status of the most significant respondents was HH work (32.9%), while the education status of the least significant respondents was others (3.3%). To compare printing and photocopying and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between printing and photocopying and the respondents' occupation status ($\chi^2 = 26.189$, df = 8, $p < 0.05$).

Email and internet browsing are other commercial services. Email and internet browsing were received by 27.6% of the total respondents (N = 720), whereas the rest of the respondents (72.4%) did not take advantage of this service. For those who took it, the occupation status of the respondents was farmer (6.5%), fisherman (4.5%), small businessman (12.1%), government employee (11.6%), student (23.1%), HH work (22.1%), day labourer (6.5%), unemployed (9%), and others (4.5%), respectively. In this respect, the occupation status of the most significant respondents was student (23.1%), while the

occupation status of the least significant respondents was fisherman (4.5%). To compare email and internet browsing and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between email and internet browsing and the respondents' occupation status ($\chi^2$ = 48.348, df = 8, $p < 0.05$).

The CV and job application service was taken by 31.9% of the total respondents (N = 720), while the rest of the respondents (68.1%) did not take this service. The respondents who took this service had the following occupation statuses: farmer (4.3%), fisherman (4.3%), small businessman (10.4%), government employee (21.3%), student (23.5%), HH work (19.6%), day labourer (5.2%), unemployed (7.4%), and others (3.9%), respectively. In this case, a significant number of the majority respondents were students (23.5%), while an insignificant number of respondents were farmers (4.3%) and fishermen (4.3%). A chi-square test was performed between the CV and job application and the occupation status of the respondents. The expected cell frequency was no less than 5. There was a statistically significant relationship between CV and job application and respondents' occupation status ($\chi^2$ = 84.776, df = 8, $p < 0.05$).

Computer, ICT, and English language proficiency training are other commercial services. Computer, ICT, and English training was received by 5.7% of the total respondents (N = 720), whereas the rest of the respondents (94.3%) did not receive this service. For those who took it, the occupation status of the respondents was farmer (4.9%), fisherman (0.0%), small businessman (22.0%), government employee (7.3%), student (34.1%), HH work (9.8%), day labourer (7.3%), unemployed (12.2%), and others (2.4%), respectively. In this respect, the occupation status of the most significant respondents was student (34.1%), while the occupation status of the least significant respondents was fisherman (0.0%). The researchers used the chi-square test to compare computer, ICT, and English training with the respondents' occupation status. The expected cell frequency was no less than 5. There was a statistically significant association between computer, ICT, and English training and the respondents' occupation status ($\chi^2$ = 32.701, df = 8, $p < 0.05$).

Phone calls and video conferencing are also commercial services. The service was taken by 12.2% of the total respondents (N = 720), but the rest of the respondents (87.8%) did not take it. Among the respondents who received this service, their occupation statuses included farmer (14.8%), fisherman (8.0%), small businessman (10.2%), government employee

(8.0%), student (17.0%), household worker (26.1%), day labourer (8.0%), unemployed (4.5%), and others (3.4%). In this case, the majority of respondents were engaged in HH work (26.1%), while the least number of respondents identified their occupation as others (3.4%). A chi-square test was performed between phone, video conferencing, and respondents' occupation status. The expected cell frequency was not less than 5. There was a statistically significant relationship between phone and video conferencing and the occupation status of respondents ($\chi^2 = 23.198$, df = 8, $p < 0.05$).

Mobile banking, or banking service, is also a commercial service. The service was taken by 27.1% of the total respondents (N = 720), while the rest of the respondents (72.9%) did not take it. The respondents' occupation statuses were farmer (11.8%), fisherman (4.6%), small businessman (20.5%), government employee (19.0%), student (8.2%), HH work (23.1%), day labourer (5.6%), unemployed (3.7%), and others (3.6%), respectively. In this regard, the occupation status of the majority of respondents was HH work (23.1%), while the occupation status of the least majority was others (3.6%). A chi-square test was performed between mobile banking or banking service and respondents' occupation status. The expected cell frequency was not less than 5. There was not a statistically significant relationship between mobile banking or banking service and the occupation status of respondents ($\chi^2 = 49.006$, df = 8, $p < 0.05$).

The scanning and laminating is also a commercial service provided by UDCs in the haor area. The service was taken by 46.9% of the total respondents (N = 720), whereas the remaining respondents (53.1%) did not take this service. Among the respondents who utilised this service, their occupation statuses included farmer (7.1%), fisherman (3.8%), small businessman (14.8%), government employee (13.9%), student (17.8%), household worker (29.3%), day labourer (4.1%), unemployed (5.6%), and others (3.6%). In this regard, the occupation status of the majority of respondents was HH work (29.3%), while the occupation status of the least majority was others (3.6%). A chi-square test was performed between scanning and laminating service and respondents' occupation status. The expected cell frequency was not less than 5. There was a statistically significant relationship between scanning and laminating services and the occupation status of respondents ($\chi^2 = 23.119$, df = 8, $p < 0.05$).

The photography is another commercial service. The photography service was received by 39% of the total respondents (N = 720), whereas the rest of the respondents (61%) did not

take this service. For those who took it, the occupation status of the respondents was farmer (11.0%), fisherman (4.6%), small businessman (13.2%), government employee (12.5%), student (12.8%), HH work (29.5%), day labourer (5.0%), unemployed (6.8%), and others (4.6%), respectively. In this respect, the occupation status of the most significant respondents was HH work (29.5%), while the occupation status of the least significant respondents was fisherman (4.6%) and others (4.6%). To compare photography and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was not a statistically significant association between photography and the respondents' occupation status ($\chi^2 = 15.485$, df = 8, $p < 0.05$).

The online visa application is another commercial service. The online visa application or visa service was received by only 8.8% of the total respondents (N = 720), whereas the rest of the respondents (91.2%) did not take this service. For those who took it, the occupation status of the respondents was farmer (12.7%), fisherman (9.5%), small businessman (12.7%), government employee (6.3%), student (14.3%), HH work (30.2%), day labourer (7.9%), unemployed (3.2%), and others (3.2%), respectively. In this respect, the occupation status of the most significant respondents was HH work (30.2%), while the occupation status of the least significant respondents was unemployed (3.2%) and others (3.2%). To compare online visa applications and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between online visa application or visa and the respondents' occupation status ($\chi^2 = 18.249$, df = 8, $p < 0.05$).

The e-tickets for air, bus, and rail are another commercial service. The e-tickets for air, bus, and rail service were received by only 20.6% of the total respondents (N = 720), whereas the rest of the respondents (79.4%) did not take this service. For those who took it, the occupation status of the respondents was farmer (6.8%), fisherman (6.1%), small businessman (12.2%), government employee (10.8%), student (20.3%), HH work (27.7%), day labourer (8.1%), unemployed (6.1%), and others (2.0%), respectively. In this respect, the occupation status of the most significant respondents was HH work (27.7%), while the occupation status of the least significant respondents was others (2.0%). The researchers used the chi-square test to compare respondents' occupation status with e-tickets for air, bus, and rail. The expected cell frequency was no less than 5. There was a statistically significant

association between e-tickets for air, bus, and rail and the respondents' occupation status ($\chi^2 = 28.857$, df = 8, $p < 0.05$).

Insurance services are another commercial service. The insurance services were received by only 13.2% of the total respondents (N = 720), whereas the rest of the respondents (86.8%) did not take them. For those who took it, the occupation status of the respondents was farmer (6.8%), fisherman (6.1%), small businessman (12.2%), government employee (10.8%), student (20.3%), HH work (27.7%), day labourer (8.1%), unemployed (6.1%), and others (2.0%), respectively. In this respect, the occupation status of the most significant respondents was HH work (27.7%), while the occupation status of the least significant respondents was others (2.0%). To compare insurance services and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between insurance services and the respondents' occupation status ($\chi^2 = 24.961$, df = 8, $p < 0.05$).

Science and technology are another commercial service. The science and technology service were received by only 11.5% of the total respondents (N = 720), whereas the rest (88.5%) did not take it. For those who took it, the occupation status of the respondents was farmer (27.7%), fisherman (6.0%), small businessman (18.1%), government employee (7.2%), student (9.6%), HH work (8.4%), day labourer (9.6%), unemployed (9.6%), and others (3.6%), respectively. In this respect, the occupation status of the most significant respondents was farmer (27.7%), while the occupation status of the least significant respondents was others (3.6%). To compare insurance services and respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was a statistically significant association between science and technology and the respondents' occupation status ($\chi^2 = 77.109$, df = 8, $p < 0.05$).

Industry and commerce are other commercial services. The industry and commerce service were received by only 10.6% of the total respondents (N = 720), whereas the rest of the respondents (89.4%) did not receive it. For those who took it, the occupation status of the respondents was farmer (5.3%), fisherman (6.6%), small businessman (17.1%), government employee (5.3%), student (17.1%), HH work (38.2%), day labourer (3.9%), unemployed (2.6%), and others (3.9%), respectively. In this respect, the occupation status of the most significant respondents was HH work (38.2%), while the occupation status of the least significant respondents was unemployed (2.6%). To compare industry and commerce and

respondents' occupation status, the chi-square test was used. The expected cell frequency was no less than 5. There was not a statistically significant association between industry and commerce and the respondents' occupation status ($\chi^2 = 12.100$, df = 8, p = 0.147).

Table 26: The commercial services offered by UDCs in haor area with considering occupation

| Commercial services offered by UDCs | | Occupation | | | | | | | | | P-Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Farmer Row N% | Fisherman Row N% | Small Businessman Row N% | Govt. Employee Row N% | Student Row N% | HH Work Row N% | Day labourer Row N% | Unemployed Row N% | Others Row N% | |
| Type/Data entry | Yes | 7.5 | 3.5 | 11.4 | 12.9 | 17.3 | 32.9 | 5.5 | 5.9 | 3.1 | 0.188 |
| | No | 9.7 | 2.6 | 13.5 | 12.3 | 11.8 | 37.0 | 2.8 | 5.2 | 5.2 | |
| Printing and Photocopying | Yes | 7.9 | 3.3 | 12.9 | 14.0 | 15.6 | 32.9 | 4.8 | 5.4 | 3.3 | 0.001 |
| | No | 11.5 | 2.0 | 12.5 | 8.5 | 9.0 | 42.5 | 1.0 | 5.5 | 7.5 | |
| E-mail and Internet browsing | Yes | 6.5 | 4.5 | 12.1 | 11.6 | 23.1 | 22.1 | 6.5 | 9.0 | 4.5 | <0.001 |
| | No | 9.8 | 2.3 | 13.1 | 12.9 | 10.2 | 40.7 | 2.7 | 4.0 | 4.4 | |
| CV and Job application | Yes | 4.3 | 4.3 | 10.4 | 21.3 | 23.5 | 19.6 | 5.2 | 7.4 | 3.9 | <0.001 |
| | No | 11.0 | 2.2 | 13.9 | 8.4 | 9.2 | 43.1 | 3.1 | 4.5 | 4.7 | |
| Computer/ICT/English Training | Yes | 4.9 | 0.0 | 22.0 | 7.3 | 34.1 | 9.8 | 7.3 | 12.2 | 2.4 | <0.001 |
| | No | 9.1 | 3.1 | 12.2 | 12.8 | 12.5 | 37.1 | 3.5 | 5.0 | 4.6 | |
| Phone/Video Conferencing | Yes | 14.8 | 8.0 | 10.2 | 8.0 | 17.0 | 26.1 | 8.0 | 4.5 | 3.4 | 0.003 |
| | No | 8.1 | 2.2 | 13.1 | 13.1 | 13.3 | 36.9 | 3.2 | 5.5 | 4.6 | |
| Mobile Banking / Bank | Yes | 11.8 | 4.6 | 20.5 | 19.0 | 8.2 | 23.1 | 5.6 | 3.6 | 3.6 | <0.001 |
| | No | 7.8 | 2.3 | 9.9 | 10.1 | 15.8 | 40.2 | 3.0 | 6.1 | 4.8 | |
| Scanning & Laminating | Yes | 7.1 | 3.8 | 14.8 | 13.9 | 17.8 | 29.3 | 4.1 | 5.6 | 3.6 | 0.003 |
| | No | 10.5 | 2.1 | 11.0 | 11.3 | 10.2 | 41.1 | 3.4 | 5.2 | 5.2 | |
| Photography | Yes | 11.0 | 4.6 | 13.2 | 12.5 | 12.8 | 29.5 | 5.0 | 6.8 | 4.6 | 0.050 |
| | No | 7.5 | 1.8 | 12.5 | 12.5 | 14.4 | 39.4 | 3.0 | 4.6 | 4.3 | |
| Online Visa application / visa | Yes | 12.7 | 9.5 | 12.7 | 6.3 | 14.3 | 30.2 | 7.9 | 3.2 | 3.2 | 0.019 |
| | No | 8.5 | 2.3 | 12.8 | 13.1 | 13.7 | 36.1 | 3.3 | 5.6 | 4.6 | |
| E-tickets for air/bus/rail | Yes | 6.8 | 6.1 | 12.2 | 10.8 | 20.3 | 27.7 | 8.1 | 6.1 | 2.0 | <0.001 |
| | No | 9.4 | 2.1 | 12.9 | 12.9 | 12.1 | 37.6 | 2.6 | 5.2 | 5.1 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Insurance services | Yes | 9.5 | 6.3 | 12.6 | 10.5 | 17.9 | 24.2 | 10.5 | 6.3 | 2.1 | 0.002 |
| | No | 8.8 | 2.4 | 12.8 | 12.8 | 13.1 | 37.3 | 2.7 | 5.3 | 4.8 | |
| Science and technology | Yes | 27.7 | 6.0 | 18.1 | 7.2 | 9.6 | 8.4 | 9.6 | 9.6 | 3.6 | <0.001 |
| | No | 6.4 | 2.5 | 12.1 | 13.2 | 14.3 | 39.1 | 3.0 | 4.9 | 4.6 | |
| Industry and commerce | Yes | 5.3 | 6.6 | 17.1 | 5.3 | 17.1 | 38.2 | 3.9 | 2.6 | 3.9 | 0.147 |
| | No | 9.3 | 2.5 | 12.3 | 13.4 | 13.4 | 35.2 | 3.7 | 5.7 | 4.5 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.7 The government services provided by UDCs and respondent's age group

Table 27 states that the government services provided by UDC include both responses and the different age groups of the respondents. According to the crosstab analysis using row percentages, 92.5% of the total respondents (N = 720) utilised the service for birth, death, or citizenship certificates, while 7.5% did not use this service. Among the respondents who took this service, the age groups of those respondents were below 30 years (37.4%), 31–50 years (50.5%), 51–70 years (10.1%), and 71 years and above (2.1%), respectively. Thereby, the majority of respondents to this service were 31–50 years old (50.5%), while an insignificant number were 71 years old and above (2.1%). A chi-square test was performed between birth, death, and citizenship certificates and the age group of respondents. No expected cell frequencies were less than 5. There was not a statistically significant relationship between birth, death, and citizenship certificates and the age group of the respondents ($\chi^2 = 5.376$, df = 3, p = 0.146).

Another service is overseas employment, where the total number of respondents was 720; 8.6% of the respondents took this service, and 91.4% of the respondents did not take it. Among the respondents who took this service, the age group of those respondents was below 30 years (38.7%), 31–50 years (58.1%), 51–70 years (3.2%), and 71 years and above (0.0%), respectively. Thereby, the majority of respondents to this survey were 31–50 years old (58.1%), while an insignificant number were 71 years old and above (0.0%). A chi-square test was used to compare overseas employment and respondents' age groups. There were no expected cell frequencies that were less than 5. There was not a statistically significant association between overseas employment and respondents' age group ($\chi^2 = 5.509$, df = 3, p = 0.138).

Similarly, the next service analysed is a passport or TIN (tax) certificate, with a total of 720 respondents; specifically, 14.2% received this service, while 85.8% did not. Among the respondents who received this service, the age groups of the respondents were below 30 years (35.3%), 31-50 years (57.8%), 51-70 years (3.9%), and 71 years and above (2.9%), respectively. Thereby, the majority of respondents to this survey were 31–50 years old (57.8%), while an insignificant number were 71 years old and above (2.9%). To compare passports, TIN (tax) certificates, and respondents' age groups, a chi-square test was utilised. There was no cell frequencies projected to be less than 5. Passports, TIN (Tax) certificates,

and respondents' age group had no statistically significant relationship ($\chi^2 = 6.270$, df = 3, p = 0.099). Likewise, livelihood information is another service where the total number of respondents was 720; particularly, 25.3% of the respondents took this service, while 74.7% did not take it. Among the respondents who received this service, the age groups of the respondents were below 30 years (39.6%), 31–50 years (53.3%), 51–70 years (6.6%), and 71 years and above (0.5%), respectively. Thereby, the majority of respondents to this survey were 31–50 years old (53.3%), while an insignificant number were 71 years old and above (0.5%). To compare livelihood information and respondents' age groups, a chi-square test was utilised. There was no cell frequencies projected to be less than 5. Livelihood information and respondents' age group had no statistically significant relationship ($\chi^2 = 7.104$, df = 3, p = 0.069).

22.1% of the total respondents (N = 720) received the land service, while 77.9% did not. Among the respondents who received this service, the age groups of the respondents were below 30 years (27.7%), 31–50 years (61.0%), 51–70 years (10.1%), and 71 years and above (1.3%), respectively. Thereby, the majority of respondents to this service were 31–50 years old (61.0%), while an insignificant number were 71 years old and above (1.3%). To compare land and respondents' age groups, a chi-square test was utilised. There was no cell frequencies projected to be less than 5. The relationship between land and the age group of the respondents was statistically significant ($\chi^2 = 8.623$, df = 3, $p < 0.05$).

Among the total respondents (N = 720), 52.2% utilised the VGD or VGF card service, while 47.8% did not use this service. Among the respondents who received this service, the age groups of the respondents were below 30 years (28.2%), 31–50 years (54.5%), 51–70 years (14.4%), and 71 years and above (2.9%), respectively. Thereby, the majority of respondents to this service were 31–50 years old (54.5%), while an insignificant number were 71 years old and above (2.9%). A chi-square test was used to compare the VGD or VGF card service with the respondents' age group. There were no cell frequencies that were expected to be lower than 5. The VGD or VGF card and age group of the respondents had a statistically significant connection ($\chi^2 = 30.179$, df = 3, $p < 0.05$).

The trade licensing service was used by 22.5% of the total respondents (N = 720), while it was not used by 77.5% of the respondents. Among the respondents who received this service, the age groups of the respondents were below 30 years (34.6%), 31-50 years (49.4%), 51-70

years (13.6%), and 71 years and above (2.5%), respectively. Thereby, the majority of respondents to this survey were 31–50 years old (49.4%), while an insignificant number were 71 years old and above (2.5%). The chi-square test was performed to compare the trade licence with the age group of the respondents. There was no cell frequencies projected to be less than 5. The trade licence and age group of the respondents were not significantly related ($\chi^2 = 2.463$, df = 3, p = 0.482).

23.9% of all respondents (N = 720) used the land recording service, while 76.1% did not. Among the respondents who received this service, the age groups of the respondents were below 30 years (29.1%), 31–50 years (51.7%), 51–70 years (15.7%), and 71 years and above (3.5%), respectively. Thereby, the majority of respondents to this service were 31–50 years old (51.7%), while an insignificant number were 71 years old and above (3.5%). The chi-square test was used to compare land recording with respondents' age groups. There were no cell frequencies that were expected to be lower than 5. The land recording and the age group of the respondents were shown to be highly connected ($\chi^2 = 11.417$, df = 3, $p < 0.05$).

38.2% of all respondents (N = 720) utilised the different government allowances, while 61.8% did not. Among the respondents who received this service, the age groups of the respondents were below 30 years (35.6%), 31–50 years (48.0%), 51–70 years (13.8%), and 71 years and above (2.5%), respectively. Thereby, the majority of respondents to this service were 31–50 years old (48.0%), while an insignificant number were 71 years old and above (2.5%). To compare various government allowances with respondents' age groups, the chi-square test was utilised. There was no cell frequencies projected to be less than 5. The various government allowances and age groups of the respondents were not shown to be closely associated ($\chi^2 = 6.362$, df = 3, p = 0.095).

Table 27: The government services offered by UDCs in haor area with considering age level of the respondents

| The government services offered by UDC | | Age group of the respondents | | | | |
|---|---|---|---|---|---|---|
| | | Below 30 Row N% | 31-50 Row N% | 51-70 Row N% | 71 and above Row N% | P-Value |
| Birth /death/ citizen certificate | Yes | 37.4 | 50.5 | 10.1 | 2.1 | 0.146 |
| | No | 22.2 | 61.1 | 14.8 | 1.9 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Overseas employment | Yes | 38.7 | 58.1 | 3.2 | 0.0 | 0.138 |
| | No | 36.0 | 50.6 | 11.1 | 2.3 | |
| Passport/ TIN (tax) certifi cate | Yes | 35.3 | 57.8 | 3.9 | 2.9 | 0.099 |
| | No | 36.4 | 50.2 | 11.5 | 1.9 | |
| Livelihood information | Yes | 39.6 | 53.3 | 6.6 | 0.5 | 0.069 |
| | No | 35.1 | 50.6 | 11.7 | 2.6 | |
| Land | Yes | 27.7 | 61.0 | 10.1 | 1.3 | 0.035 |
| | No | 38.7 | 48.5 | 10.5 | 2.3 | |
| VGD/VGF card database | Yes | 28.2 | 54.5 | 14.4 | 2.9 | <0.001 |
| | No | 45.1 | 47.7 | 6.1 | 1.2 | |
| Trade license | Yes | 34.6 | 49.4 | 13.6 | 2.5 | 0.482 |
| | No | 36.7 | 51.8 | 9.5 | 2.0 | |
| Land recording | Yes | 29.1 | 51.7 | 15.7 | 3.5 | 0.010 |
| | No | 38.5 | 51.1 | 8.8 | 1.6 | |
| Various government allowances | Yes | 35.6 | 48.0 | 13.8 | 2.5 | 0.095 |
| | No | 36.6 | 53.3 | 8.3 | 1.8 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.8 The information services offered by UDCs and respondent's age group

Table 28 shows two categories of data, including the age group of the respondents and the information services provided by UDCs in the Haor area. The education, admissions test, form, and exam results were taken by 50.6% of the total respondents (N = 720), while the remaining respondents (49.4%) did not take this service. The respondents who took this service had the following age groups: below 30 years (51.1%), 31–50 years (40.7%), 51–70 years (6.6%), and 71 years and above (1.6%), respectively. Based on this result of crosstab analysis, the age group of the majority of respondents was below 30 years (51.1%), while the age group of the least number of respondents was 71 years and above (1.6%). A chi-square test was performed between education, admission test, form fill-up, exam result, and the respondent's age group. The expected frequency was no less than 5. There was a statistically significant relationship between education, admission test, form fill-up, and exam results and the age group of the respondents ($\chi^2 = 71.889$, df = 3, $p < 0.05$).

Another service is the government form download. 43.3% of the total respondents (N = 720) received this service, while 56.7% did not. The respondents who took this service had the following age groups: below 30 years (42.9%), 31–50 years (46.5%), 51–70 years (8.7%), and 71 years and above (1.9%), respectively. Based on this result of crosstab analysis, the age group of the majority of respondents was below 30 years (42.9%), while the age group of the

least number of respondents was 71 years and above (1.9%). A chi-square test was performed between the government form download and the respondent's age group. The expected frequency was no less than 5. There was a statistically significant relationship between government form download and the age group of the respondents ($\chi^2 = 10.975$, df = 3, $p < 0.05$). 42.5% of the total respondents (N = 720) received the health service, while the remaining respondents (57.5%) did not receive this service. The respondents who took this service had the following age groups: below 30 years (42.9%), 31–50 years (46.5%), 51–70 years (8.7%), and 71 years and above (1.9%), respectively. Based on this result of crosstab analysis, the age group of the majority of respondents was 31–50 years (46.5%), while the age group of the least number of respondents was 71 years and above (1.9%). A chi-square test was performed between health and the respondent's age group. The expected frequency was no less than 5. There was not a statistically significant association between health and the respondent's age group ($\chi^2 = 1.429$, df = 3, $p = 0.699$).

The next service is agriculture information. 28.9% of the total respondents (N = 720) received the agriculture information, while the remaining respondents (71.1%) did not receive this service. Based on the crosstab analysis of the agriculture information of the respondents who receive this service, the age groups of the respondents were below 30 years (33.2%), 31-50 years (57.7%), 51-70 years (8.2%), and 71 years and above (1.0%), respectively. Based on this result of crosstab analysis, the age group of the majority of respondents was 31–50 years (57.7%), while the age group of the least number of respondents was 71 years and above (1.0%). The chi-square test was used to compare agriculture information with the respondents' age group. There were no cell frequencies that were expected to be lower than 5. There was not a statistically significant association between agriculture information and the age group of the respondents ($\chi^2 = 6.313$, df = 3, $p = 0.097$).

The next service is law and human rights. 14% of the total respondents (N = 720) received the law and human rights service, while the remaining respondents (86%) did not. Based on the crosstab analysis of the law and human rights of the respondents who received this service, the age groups of the respondents were below 30 years (39.6%), 31–50 years (52.5%), 51–70 years (7.9%), and 71 years and above (0.0%), respectively. In this case, the majority of the respondents' age group was 31–50 years (52.5%), but the least number of respondents' age group was 71 years and above (0.0%). The chi-square test was used to compare law and human rights with the respondents' age group. There were no cell

frequencies that were expected to be lower than 5. Law and human rights and the age group of the respondents did not show a statistically significant association ($\chi^2 = 3.549$, df = 3, p = 0.314). Tourism is also another service. This service received only 0.6% of the total respondents (N = 720), whereas the rest of the respondents (99.4%) did not take it. For those who took this service, the age group of the respondents was below 30 years (75.0%), 31–50 years (25.0%), 51–70 years (0.0%), and 71 years and above (0.0%), respectively. In this case, the majority of respondents were in the age group below 30 years (75.0%), while the smallest number of respondents were in the age groups of 51–70 years (0.0%) and 71 years and above (0.0%). A chi-square test was performed between tourism and the respondent's age group. The expected cell frequency was no less than 5. There was not a statistical association between tourism and the age group of the respondents ($\chi^2 = 2.710$, df = 3, p = 0.439).

Environment and disaster management are also other services. This service received only 13.6% of the total respondents (N = 720), whereas the rest of the respondents (86.4%) did not take it. For those who took this service, the age groups of the respondents were below 30 years (27.6%), 31–50 years (60.2%), 51–70 years (10.2%), and 71 years and above (2.0%), respectively. In this case, the majority of the respondents' age group was 31–50 years (60.2%), but the least number of respondents' age group was 71 years and above (2.0%). A chi-square test was performed between environment and disaster management and the respondent's age group. The expected cell frequency was no less than 5. There was not a statistically significant relationship between environment and disaster management and the age group of the respondents ($\chi^2 = 4.149$, df = 3, p = 0.246).

Table 28: The information services offered by UDCs in haor area with considering age group of the respondents

| Information services offered by UDC | | Age group of the respondents | | | | |
|---|---|---|---|---|---|---|
| | | Below 30 Row N% | 31-50 Row N% | 51-70 Row N% | 71 and above Row N% | P-Value |
| Education/ admission test & form / exam result | Yes | 51.1 | 40.7 | 6.6 | 1.6 | <0.001 |
| | No | 21.1 | 62.1 | 14.3 | 2.5 | |
| Govt. forms download | Yes | 42.9 | 46.5 | 8.7 | 1.9 | 0.012 |
| | No | 31.1 | 54.9 | 11.8 | 2.2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Health | Yes | 35.9 | 50.0 | 11.4 | 2.6 | 0.699 |
| | No | 36.5 | 52.2 | 9.7 | 1.7 | |
| Agricultural Information | Yes | 33.2 | 57.7 | 8.2 | 1.0 | 0.097 |
| | No | 37.5 | 48.6 | 11.3 | 2.5 | |
| Law and human rights | Yes | 39.6 | 52.5 | 7.9 | 0.0 | 0.314 |
| | No | 35.7 | 51.1 | 10.8 | 2.4 | |
| Tourism | Yes | 75.0 | 25.0 | 0.0 | 0.0 | 0.439 |
| | No | 36.0 | 51.4 | 10.5 | 2.1 | |
| Environment and Disaster management | Yes | 27.6 | 60.2 | 10.2 | 2.0 | 0.246 |
| | No | 37.6 | 49.8 | 10.5 | 2.1 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.9 The commercial services offered by UDCs and respondent's the age group

Table 29 illustrates the commercial services provided by UDCs in the haor area, along with the occupation status of the respondents, which includes responses categorised as 'yes' and 'no'. A total of 720 respondents participated in the survey, with 35.4% of them utilising this type of data entry service. Conversely, 64.6% of the respondents did not use this service. The respondents' age distribution for this service was as follows: below 30 years (37.6%), 31–50 years (50.2%), 51–70 years (10.6%), and 71 years and above (1.6%). The data indicates that the predominant age group among respondents was 31–50 years, comprising 50.2% of the total. Conversely, respondents aged 71 years and above represented a minimal portion, accounting for only 1.6%. A chi-square test was conducted to analyse the relationship between the type of data entry and the age group of the respondents. The anticipated cell frequency was not less than 5. The analysis indicated no statistically significant relationship between the type of data entry and the age group of respondents ($\chi^2 = 0.811$, df = 3, p = 0.847).

Printing and photocopying represent another commercial service. A total of 72.2% of respondents (N = 720) received printing and photocopying services, while 27.8% did not receive this service. The respondents' age groups were categorised as follows: below 30 years (38.7%), 31–50 years (50.8%), 51–70 years (9.0%), and 71 years and above (1.5%). The age group of the most significant respondents was 31–50 years, comprising 50.8% of the total, whereas the age group of the least significant respondents was 71 years and above, accounting for 1.5%. The chi-square test was employed to analyse the relationship between printing and photocopying as well as the age group of the respondents. The anticipated cell

frequency was not less than 5. A statistically significant association was identified between printing and photocopying and the age group of the respondents ($\chi^2 = 9.150$, df = 3, $p < 0.05$).

Commercial services include email and internet browsing. A total of 27.6% of respondents (N = 720) used email and internet browsing services, while 72.4% did not engage with this service. The respondents' age distribution was as follows: below 30 years (44.7%), 31–50 years (41.2%), 51–70 years (11.6%), and 71 years and above (2.5%). The age group with the highest representation among respondents was under 30 years, accounting for 44.7%. Conversely, the age group with the lowest representation was 71 years and above, comprising 2.5% of the total respondents. The chi-square test was employed by the researchers to analyse the relationship between email and internet browsing behaviours and the age groups of the respondents. The anticipated cell frequency was not less than 5. A statistically significant association was observed between email and internet browsing activities and the age group of the respondents ($\chi^2 = 11.448$, df = 3, $p < 0.05$).

A total of 31.9% of respondents (N = 720) utilised the CV and job application services, whereas 68.1% of respondents did not engage with them. The distribution of respondents by age group was as follows: below 30 years (51.7%), 31–50 years (37.0%), 51–70 years (9.6%), and 71 years and above (1.7%). A substantial proportion of respondents were under the age of 30, comprising 51.7% of the total, whereas a minimal percentage, 1.7%, were aged 71 years and older. A chi-square test was conducted to analyse the relationship between the CV and job application variables and the age group of the respondents. The anticipated cell frequency was not less than 5. A statistically significant relationship was observed between CV and job application in relation to the respondents' age group ($\chi^2 = 36.267$, df = 3, $p < 0.05$).

Training in computer skills, information and communication technology (ICT), and English language proficiency constitutes additional commercial services offered. A total of 5.7% of respondents (N = 720) received training in computers, ICT, and English, while 94.3% did not utilise this service. The respondents' age distribution was as follows: below 30 years accounted for 70.7%, 31–50 years represented 26.8%, 51–70 years comprised 2.4%, and those aged 71 years and above constituted 0.0%. The age group representing the majority of respondents was under 30 years, accounting for 70.7%, whereas the age group with the least representation was 71 years and older, comprising 0.0%. The chi-square test was employed to

compare the training in computers, ICT, and English language proficiency across different age groups of respondents. The anticipated cell frequency was a minimum of 5. A statistically significant association was observed between computer, ICT, and English language proficiency training and the age group of the respondents ($\chi^2 = 22.881$, df = 3, $p < 0.05$).

Phone calls and video conferencing are classified as commercial services. A total of 12.2% of respondents (N = 720) used the service, while the majority, 87.8%, did not engage with it. The distribution of respondents who utilised this service is as follows: individuals aged below 30 years constituted 42.0%; those aged 31–50 years represented 52.3%; the 51–70 age group accounted for 5.7%; and there were no respondents aged 71 years and above (0.0%). The predominant age group among respondents was 31–50 years, comprising 52.3% of the total, whereas the age group of 71 years and above represented 0.0% of the respondents. A chi-square test was conducted to analyse the relationship between the mode of communication (phone or video conferencing) and the age group of respondents. The anticipated cell frequency was not below 5. A statistically significant relationship was observed between phone and video conferencing usage and the age group of respondents ($\chi^2 = 5.196$, df = 3, p = 0.158).

Mobile banking functions as a commercial service within the banking sector. A total of 27.1% of respondents (N = 720) used the service, whereas 72.9% did not engage with it. The respondents' age distribution for the service was as follows: below 30 years (39.5%), 31–50 years (54.9%), 51–70 years (5.6%), and 71 years and above (0.0%). The majority of respondents were in the age group of 31–50 years, comprising 54.9% of the total, whereas the age group of 71 years and above accounted for 0.0% of respondents. A chi-square test was conducted to analyse the relationship between mobile banking services and the age group of respondents. The anticipated cell frequency was not below 5. A statistically significant relationship was observed between mobile banking services and the age group of respondents, with a chi-square value of 12.884, degrees of freedom equal to 3, and a p-value less than 0.05.

UDCs in the Haor area commercially offer scanning and laminating services. Of the total respondents (N = 720), 46.9% used the service, whereas 53.1% did not engage with it. The respondents who used this service were categorised into the following age groups: below 30 years (41.4%), 31–50 years (50.0%), 51–70 years (7.4%), and 71 years and above (1.2%).

The predominant age group among respondents was 31–50 years, comprising 50.0% of the total, whereas the age group of 71 years and above represented the smallest proportion at 1.2%. A chi-square test was conducted to analyse the relationship between scanning and laminating services and the age groups of the respondents. The anticipated frequency of cells was not below 5. A statistically significant relationship was observed between scanning and laminating services and the age group of respondents ($\chi^2 = 12.947$, df = 3, $p < 0.05$).

The photography service is categorised as a commercial offering. Of the total respondents (N = 720), 39% used the photography service, while 61% did not engage with it. The respondents' age distribution was as follows: below 30 years (36.7%), 31–50 years (50.5%), 51–70 years (11.4%), and 71 years and above (1.4%). The age group with the highest representation among respondents was 31–50 years, accounting for 50.5% of the total. Conversely, the age group with the lowest representation was 71 years and above, comprising 1.4% of the respondents. The chi-square test was employed to analyse the relationship between photography and the age group of respondents. The anticipated frequency of cells was not less than 5. The analysis revealed no statistically significant association between photography and the age group of the respondents ($\chi^2 = 1.447$, df = 3, $p = 0.694$).

The online visa application constitutes another commercial service. A total of 720 respondents were surveyed, of which only 8.8% utilised the online visa application or visa service. In contrast, 91.2% of respondents did not engage with these services. The respondents' age distribution was as follows: below 30 years (38.1%), 31-50 years (58.7%), 51-70 years (3.2%), and 71 years and above (0.0%). The age group with the highest representation among respondents was 31–50 years, accounting for 58.7%. Conversely, the age group with the lowest representation was 71 years and above, with a percentage of 0.0%. The chi-square test was employed by the researchers to analyse the relationship between online visa applications, or visa services, and the age groups of the respondents. The anticipated cell frequency was not less than 5. The analysis indicated no statistically significant association between online visa application or visa and the respondents' age group ($\chi^2 = 5.733$, df = 3, $p = 0.125$).

The electronic tickets for air, bus, and rail represent an additional commercial service. A total of 20.6% of respondents (N = 720) received e-tickets for air, bus, and rail service, while 79.4% did not utilise this service. The respondents' age distribution was as follows: below 30

years (40.5%), 31–50 years (41.9%), 51–70 years (14.2%), and 71 years and above (3.4%). The age group with the highest representation among respondents was 31–50 years, accounting for 41.9%. Conversely, the age group with the lowest representation was 71 years and above, comprising 3.4% of the respondents. The researchers employed a chi-square test to analyse the relationship between e-tickets for air, bus, and rail and the age groups of the respondents. The anticipated cell frequency was not less than 5. A statistically significant association was observed between e-tickets for air, bus, and rail and the age group of respondents ($\chi^2 = 8.174$, df = 3, $p < 0.05$).

Insurance services constitute a distinct category of commercial offerings. A total of 13.2% of respondents (N = 720) used the insurance services, while 86.8% did not engage with them. The respondents' age distribution was as follows: below 30 years (40.0%), 31–50 years (38.9%), 51–70 years (15.8%), and 71 years and above (5.3%). The age group representing the highest percentage of respondents was under 30 years, accounting for 40.0%. Conversely, the age group with the lowest percentage of respondents was 71 years and above, comprising 5.3%. The chi-square test was employed to analyse the relationship between insurance services and the age group of respondents. The anticipated cell frequency was at least 5. A statistically significant association was observed between insurance services and the age group of respondents ($\chi^2 = 12.001$, df = 3, $p < 0.05$).

Science and technology represent an additional commercial service. A total of 11.5% of respondents (N = 720) used the science and technology service, while 88.5% did not engage with it. The respondents' age distribution was as follows: below 30 years (34.9%), 31-50 years (53.0%), 51-70 years (12.0%), and 71 years and above (0.0%). The primary age group of respondents was 31–50 years, comprising 53.0% of the total, whereas the age group of 71 years and above represented 0.0% of the respondents. The chi-square test was employed to compare insurance services across different age groups of respondents. The anticipated cell frequency was a minimum of 5. The analysis revealed no statistically significant association between science and technology and the age group of the respondents ($\chi^2 = 2.295$, df = 3, $p = 0.513$).

Industry and commerce represent additional sectors within commercial services. A total of 10.6% of respondents (N = 720) reported receiving the industry and commerce service, while 89.4% did not receive it. The respondents' age distribution was as follows: below 30 years

(38.2%), 31–50 years (51.3%), 51–70 years (6.6%), and 71 years and above (3.9%). The age group with the highest representation among respondents was 31–50 years, accounting for 51.3% of the total. Conversely, the age group with the lowest representation was 71 years and above, comprising 3.9% of the respondents. The chi-square test was employed to compare industry and commerce alongside the respondents' age groups. The anticipated cell frequency was not less than 5. The analysis revealed no statistically significant association between industry and commerce within the respondents' age group ($\chi^2 = 2.704$, df = 3, p = 0.440).

Table 29: The commercial services offered by UDCs in haor area with considering age group of the respondents

| Commercial services offered by UDC | | Age group of the respondents | | | | |
|---|---|---|---|---|---|---|
| | | Below 30 Row N% | 31-50 Row N% | 51-70 Row N% | 71 and above Row N% | P-Value |
| Type/Data entry | Yes | 37.6 | 50.2 | 10.6 | 1.6 | |
| | No | 35.5 | 51.8 | 10.3 | 2.4 | 0.847 |
| Printing and Photocopying | Yes | 38.7 | 50.8 | 9.0 | 1.5 | |
| | No | 30.0 | 52.5 | 14.0 | 3.5 | 0.027 |
| E-mail and Internet browsing | Yes | 44.7 | 41.2 | 11.6 | 2.5 | |
| | No | 33.0 | 55.1 | 10.0 | 1.9 | 0.010 |
| CV and Job application | Yes | 51.7 | 37.0 | 9.6 | 1.7 | |
| | No | 29.0 | 58.0 | 10.8 | 2.2 | <0.001 |
| Computer/ICT/English Training | Yes | 70.7 | 26.8 | 2.4 | 0.0 | |
| | No | 34.2 | 52.7 | 10.9 | 2.2 | <0.001 |
| Phone/Video Conferencing | Yes | 42.0 | 52.3 | 5.7 | 0.0 | |
| | No | 35.4 | 51.1 | 11.1 | 2.4 | 0.158 |
| Mobile Banking / Bank | Yes | 39.5 | 54.9 | 5.6 | 0.0 | |
| | No | 35.0 | 49.9 | 12.2 | 2.9 | 0.005 |
| Scanning & Laminating | Yes | 41.4 | 50.0 | 7.4 | 1.2 | |
| | No | 31.7 | 52.4 | 13.1 | 2.9 | 0.005 |
| Photography | Yes | 36.7 | 50.5 | 11.4 | 1.4 | |
| | No | 36.0 | 51.7 | 9.8 | 2.5 | 0.694 |
| Online Visa application / visa | Yes | 38.1 | 58.7 | 3.2 | 0.0 | |
| | No | 36.1 | 50.5 | 11.1 | 2.3 | 0.125 |
| E-tickets for air/bus/rail | Yes | 40.5 | 41.9 | 14.2 | 3.4 | |
| | No | 35.1 | 53.7 | 9.4 | 1.7 | 0.043 |
| Insurance services | Yes | 40.0 | 38.9 | 15.8 | 5.3 | |
| | No | 35.7 | 53.1 | 9.6 | 1.6 | 0.007 |
| Science and technology | Yes | 34.9 | 53.0 | 12.0 | 0.0 | |
| | No | 36.4 | 51.0 | 10.2 | 2.4 | 0.513 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Industry and commerce | Yes | 38.2 | 51.3 | 6.6 | 3.9 | 0.440 |
| | No | 36.0 | 51.2 | 10.9 | 1.9 | |

Source: Field Survey, April 2023 to June 2024.

### 7.2.10 The government services provided by UDC and respondents' income level

Table 30 states that the government services provided by UDC include both responses and the different backgrounds and incomes of the respondents. According to the crosstab analysis using row percentages, 92.5% of the 720 respondents utilised the service for birth, death, or citizenship certificates, while 7.5% did not use this service. Among the respondents who took this service, their level of income was 10000-20000 (73.6%), 20001-30000 (20.4%), 30001-40000 (5.6%), 40001-50000 (0.5%), and 60000+ (0.0%), respectively. Thereby, the majority of respondents' income for this service was 10000–20000 (73.6%), while no respondent was found in the income group of 60000 plus (0.0%). A chi-square test was performed between birth, death, and citizenship certificates and the income level of respondents. There was a statistically significant relationship between birth, death, and citizenship certificates and the income level of the respondents ($\chi^2 = 15.577$, df = 4, $p = 0.004$).

Another service is overseas employment, where the total number of respondents was 720; 8.6% of the respondents took this service, and 91.4% of the respondents did not take it. Among the respondents who took this service, their levels of income were: 10000-20000 (45.2%), 20001-30000 (46.8%), 30001-40000 (6.5%), 40001-50000 (0.0%), and 60000 plus (1.6%), respectively. In this case, the level of income of the majority of respondents was 20001-30000 (46.8%), while the level of income of the least number of respondents was 40001-50000 (0.0%). A chi-square test was used to compare overseas employment and respondents' income levels. There was a statistically significant association between overseas employment and respondents' income level ($\chi^2 = 42.163$, df = 4, $p < 0.001$).

Similarly, the next service analysed is a passport or TIN (tax) certificate, which had a total of 720 respondents; specifically, 14.2% of these respondents received this service, while 85.8% did not. Among the respondents who received this service, their level of income was 10000-20000 (48.0%), 20001-30000 (36.3%), 30001-40000 (14.7%), 40001-50000 (1.0%), and 60000+ (0.0%), respectively. In this respect, the level of income of the majority of respondents was 10000–20000 (48.0%), while the level of income of the least number of respondents was 60000 and plus (0.0%). A chi-square test was used to compare overseas

employment and respondents' income levels. There was a statistically significant association between overseas employment and respondents' income level ($\chi^2 = 41.980$, df = 4, $p < 0.001$).

Likewise, livelihood information is another service where the total number of respondents was 720; particularly, 25.3% of the respondents took this service, while 74.7% did not take it. Among the respondents who took this, their level of income was 10000-20000 (65.4%), 20001-30000 (27.5%), 30001-40000 (7.1%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. Thereby, the level of income of the majority of respondents was 10000–20000 (65.4%), while the income level of the insignificant number of respondents was 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. To compare livelihood information with respondents' income levels, a chi-square test was used. Livelihood information and respondents' income level had a statistically significant relationship ($\chi^2 = 10.515$, df = 4, p = 0.033).

The land service was received by 22.1% of the total respondents (720), while 77.9% did not receive this service. The level of income of the respondents who obtained this service was 10000-20000 (61.0%), 20001-30000 (28.9%), 30001-40000 (10.1%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. In this situation, the important respondents had 10000–20000 (61.0%), whereas the insignificant respondents had 40001–50000 (0.0%) and 60000 plus (0.0%). To compare land and respondents' income levels, a chi-square test was utilised. The relationship between land and level of income was statistically significant ($\chi^2 = 18.912$, df = 4, p = 0.001).

Among the total respondents (720), 52.2% utilised the VGD or VGF card service, while 47.8% did not use this service. The income level of the respondents who took this service was 10000-20000 (75.3%), 20001-30000 (21.3%), 30001-40000 (3.2%), 40001-50000 (0.3%), and 60000 plus (0.0%), respectively. In this regard, the significant respondents had 10000–20000 (75.3%), while the insignificant respondents had 60000 plus (0.0%). A chi-square test was used to compare the VGD or VGF card with respondents' income levels. The VGD or VGF card and income level of the respondents had a statistically significant association ($\chi^2 = 12.618$, df = 4, p = 0.013).

The trade licensing service was used by 22.5% of the total respondents (720), while it was not used by 77.5% of the respondents. 10000-20000 (54.9%), 20001-30000 (31.5%), 30001-

40000 (12.3%), 40001-50000 (1.2%), and 60000 plus (0.0%) were the income levels of those who obtained this service. The most significant responses (54.9%) had 10000–20000, while the least significant (0.0%) income level was 60000 plus. The chi-square test was performed to compare the trade licence with the income levels of the respondents. The trade licence and income level were significantly related ($\chi^2 = 40.863$, df = 4, $p < 0.001$). The land recording service was utilised by 23.9% of all respondents (720), whereas it was not used by 76.1%. The educational levels of individuals who acquired this service were 10000-20000 (64.0%), 20001-30000 (27.9%), 30001-40000 (7.6%), 40001-50000 (0.6%), and 60000 plus (0.0%), respectively. The majority of respondents (64.0%) had 10000–20000, while the minority (0.0%) had 60000 and above. The chi-square test was used to compare land recording with respondents' income levels. Land recording and income levels were shown to be highly connected ($\chi^2 = 10.895$, df = 4, $p = 0.028$).

38.2% of all respondents (N = 720) used the various government allowances, but 61.8% did not. The income levels of those who obtained this service were 10000-20000 (69.1%), 20001-30000 (27.3%), 30001-40000 (3.3%), 40001-50000 (0.4%), and 60000 plus (0.0%). The majority of respondents (69.1%) had only earned 10000–20000, while none of them (0.0%) earned 60000 and above. To compare various government allowances with respondents' income levels, a chi-square test was utilised. Various government benefits and income levels were shown to be closely associated ($\chi^2 = 18.413$, df = 4, $p = 0.001$).

Table 30: The government services offered by UDCs in haor area with considering income level of the respondents

| Government Services offered by UDCs | | Income | | | | | |
|---|---|---|---|---|---|---|---|
| | | 10000-20000 Row % | 20001-30000 Row % | 30001-40000 Row % | 40001-50000 Row % | 60000+ Row % | P-value (Chi-square) |
| Birth /death/ citizen certificate | Yes | 73.6 | 20.4 | 5.6 | 0.5 | 0.0 | 0.004 |
| | No | 70.4 | 16.7 | 11.1 | 0.0 | 1.9 | |
| Overseas employment | Yes | 45.2 | 46.8 | 6.5 | 0.0 | 1.6 | <0.001 |
| | No | 76.0 | 17.6 | 5.9 | 0.5 | 0.0 | |
| Passport/ TIN (tax) certifi cate | Yes | 48.0 | 36.3 | 14.7 | 1.0 | 0.0 | <0.001 |
| | No | 77.5 | 17.5 | 4.5 | 0.3 | 0.2 | |
| Livelihood information | Yes | 65.4 | 27.5 | 7.1 | 0.0 | 0.0 | 0.033 |
| | No | 76.0 | 17.7 | 5.6 | 0.6 | 0.2 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Land | Yes | 61.0 | 28.9 | 10.1 | 0.0 | 0.0 | 0.001 |
| | No | 76.8 | 17.6 | 4.8 | 0.5 | 0.2 | |
| VGD/VGF card database | Yes | 75.3 | 21.3 | 3.2 | 0.3 | 0.0 | 0.013 |
| | No | 71.2 | 18.9 | 9.0 | 0.6 | 0.3 | |
| Trade license | Yes | 54.9 | 31.5 | 12.3 | 1.2 | 0.0 | <0.001 |
| | No | 78.7 | 16.8 | 4.1 | 0.2 | 0.2 | |
| Land recording | Yes | 64.0 | 27.9 | 7.6 | 0.6 | 0.0 | 0.028 |
| | No | 76.3 | 17.7 | 5.5 | 0.4 | 0.2 | |
| Various government allowances | Yes | 69.1 | 27.3 | 3.3 | 0.4 | 0.0 | 0.001 |
| | No | 76.0 | 15.7 | 7.6 | 0.4 | 0.2 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.11 The information services provided by UDCs and respondents' income level

Table 31 presents two distinct categories of data: the income levels of the respondents and the information services offered by UDCs in the Haor area. Of the total respondents (N = 720), 50.6% used the education, admission test, form, and exam result services, whereas 49.4% did not engage with this service. The respondents using this service were grouped into the following income groups: 10,000–20,000 (69.2%), 20,001–30,000 (24.2%), 30,001–40,000 (5.8%), 40,001–50,000 (0.5%), and 60,000 and above (0.3%), respectively. The crosstab analysis indicates that the predominant income group among respondents falls within the range of 10,000 to 20,000, comprising 69.2% of the total. Conversely, the income group with the fewest respondents is that of 60,000 and above, accounting for only 0.3%. A chi-square test was conducted to analyse the relationship between education, admissions tests, form fill-ups, exam results, and the respondent's level of income. The analysis revealed no statistically significant relationship between education, admission test, form fill-up, and exam results in relation to the income level of the respondents ($\chi^2 = 8.897$, df = 4, p = 0.061).

A further service provided is the download of government forms. Of the total respondents (N = 720), 43.3% used this service, and 56.7% did not engage with it. The participants in this service were categorised into the following income brackets: 10,000-20,000 (66.3%), 20,001-30,000 (25.3%), 30,001-40,000 (7.4%), 40,001-50,000 (0.6%), and 60,000 and above (0.3%), respectively. The crosstab analysis indicates that the predominant income group among respondents is 10,000–20,000, comprising 66.3% of the total. Conversely, the income group with the fewest respondents is 60,000 and above, accounting for only 0.3%. A chi-square test was conducted to analyse the relationship between the government form's download and the

respondent's income. A statistically significant relationship was observed between the form of government downloaded and the income level of the respondents ($\chi^2 = 14.785$, df = 4, p = 0.005).

A total of 42.5% of respondents (N = 720) used the health service, while 57.5% did not engage with it. The respondents using this service reported the following income levels: 10,000–20,000 (68.0%), 20,001–30,000 (24.5%), 30,001–40,000 (7.2%), 40,001–50,000 (0.3%), and 60,000 and above (0.0%), respectively. The crosstab analysis indicates that the predominant income group among respondents is 10,000–20,000, comprising 68.0% of the total. Conversely, the income group with the fewest respondents is 60,000 and above, representing 0.0% of the total sample. A chi-square test was conducted to examine the relationship between health and the respondent's income level. The analysis revealed no statistically significant association between health and the respondent's income level ($\chi^2 = 9.296$, df = 4, p = 0.054).

The subsequent service pertains to agricultural information. Of the total respondents (N = 720), 28.9% requested agriculture information, whereas 71.1% did not seek this service. The crosstab analysis of the agricultural information provided by the respondents utilising this service indicates the following income distribution: 10,000–20,000 (68.8%), 20,001–30,000 (26.4%), 30,001–40,000 (4.8%), 40,001–50,000 (0.0%), and 60,000 plus (0.0%). The crosstab analysis indicates that the predominant income group among respondents falls within the range of 10,000 to 20,000, comprising 68.8% of the total. Conversely, the income groups with the fewest respondents are those earning between the brackets of 40,001–50,000 and 60,000 and above, both of which account for 0.0% of the responses. A chi-square test was employed to analyse the relationship between agricultural information and the income levels of respondents. The analysis revealed no statistically significant association between agricultural information and income level groups ($\chi^2 = 8.898$, df = 4, p = 0.064).

The subsequent service pertains to law and human rights. Of the total respondents (N = 720), 14% engaged with the law and human rights service, whereas 86% did not participate. The cross-tab analysis of the law and human rights concerning the respondents who used this service indicates the following income distribution: 10,000-20,000 (65.3%), 20,001-30,000 (28.7%), 30,001-40,000 (5.9%), 40,001-50,000 (0.0%), and 60,000 and above (0.0%). The data indicates that the predominant income level among respondents falls within the range of

10,000 to 20,000, accounting for 65.3% of the total. Conversely, the income levels of 40,001 to 50,000 and 60,000 and above were reported by 0.0% of respondents, indicating no representation in these categories. The chi-square test was employed to analyse the relationship between law and human rights and the respondents' income levels. The analysis revealed no statistically significant association between law and human rights and the income group level ($\chi^2 = 5.963$, df = 4, p = 0.202).

Tourism constitutes an additional service sector. The service was utilised by only 0.6% of the total respondents (N = 720), while the remaining 99.4% did not engage with it. The respondents who utilised this service reported income levels as follows: 10,000–20,000 (100%), 20,001–30,000 (0.0%), 30,001–40,000 (0.0%), 40,001–50,000 (0.0%), and 60,000 and above (0.0%). The data indicates that the predominant income level among respondents was within the range of 10,000 to 20,000, accounting for 100% of the responses. Conversely, there were no respondents in the income brackets of 20,001 to 30,000, 30,001 to 40,000, 40,001 to 50,000, and above 60,000, each reporting 0.0% participation. A chi-square test was conducted to analyse the relationship between tourism and the income level of the respondents. The analysis revealed no statistical association between tourism and the income levels of the respondents, as indicated by the chi-square statistic ($\chi^2 = 1.463$, df = 4, p = 0.833).

Environment and disaster management constitute additional services. The service was utilised by 13.6% of the total respondents (N = 720), while 86.4% of the respondents did not participate. The income distribution of respondents who used this service is as follows: 10,000–20,000 (78.6%), 20,001–30,000 (16.3%), 30,001–40,000 (5.1%), 40,001–50,000 (0.0%), and 60,000 and above (0.0%). The majority of respondents reported an income level between 10,000 and 20,000, accounting for 78.6% of the total. Conversely, the income brackets of 40,001 to 50,000 and 60,000 and above had no respondents, each representing 0.0% of the sample. A chi-square test was conducted to analyse the relationship between environmental factors and disaster management in relation to the respondents' income levels. The analysis indicated that there was no statistically significant relationship between the environment and disaster management and the income level of the respondents ($\chi^2 = 2.017$, df = 4, p = 0.733).

Table 31: The information services offered by UDCs in haor area with considering income level of the respondents

| Information services offered by UDCs | | Income | | | | | |
|---|---|---|---|---|---|---|---|
| | | 10000-20000 Row % | 20001-30000 Row % | 30001-40000 Row % | 40001-50000 Row % | 60000+ Row % | P-value (Chi-square) |
| Education/ admission test & form / exam result | Yes | 69.2 | 24.2 | 5.8 | 0.5 | 0.3 | 0.061 |
| | No | 77.5 | 16.0 | 6.2 | 0.3 | 0.0 | |
| Govt. forms download | Yes | 66.3 | 25.3 | 7.4 | 0.6 | 0.3 | 0.005 |
| | No | 78.7 | 16.2 | 4.9 | 0.2 | 0.0 | |
| Health | Yes | 68.0 | 24.5 | 7.2 | 0.3 | 0.0 | 0.054 |
| | No | 77.3 | 16.9 | 5.1 | 0.5 | 0.2 | |
| Agricultural Information | Yes | 68.8 | 26.4 | 4.8 | 0.0 | 0.0 | 0.064 |
| | No | 75.2 | 17.6 | 6.4 | 0.6 | 0.2 | |
| Law and human rights | Yes | 65.3 | 28.7 | 5.9 | 0.0 | 0.0 | 0.202 |
| | No | 74.6 | 18.7 | 6.0 | 0.5 | 0.2 | |
| Tourism | Yes | 100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.833 |
| | No | 73.2 | 20.3 | 6.0 | 0.4 | 0.1 | |
| Environment and Disaster management | Yes | 78.6 | 16.3 | 5.1 | 0.0 | 0.0 | 0.733 |
| | No | 72.5 | 20.7 | 6.1 | 0.5 | 0.2 | |

Source: Field Survey, April 2023 to June 2024

### 7.2.12 The commercial services provided by UDCs and respondents' income levels

Table 32 demonstrates the commercial services offered by UDCs in the haor area and the levels of income of the respondents, with both responses including 'yes' and 'no'. 35.4% of the total respondents (N = 720) used the type of data entry service, while the remaining respondents (64.6%) did not. The respondents, those who take this service, had a level of income of 10000–20000 (62.7%), 20001–30000 (29.4%), 30001–40000 (6.7%), 40001–50000 (0.8%), and 60000 plus (0.4%), respectively. In this case, the significant number of the majority of respondents was 10000–20000 (62.7%), while the insignificant number of the respondents was 60000 plus (0.4%). A chi-square test was performed between the type of data entry and the levels of income of the respondents. There was a statistically significant relationship between type of data entry and respondents' level of income ($\chi^2 = 26.318$, df = 4, $p < 0.001$).

Printing and photocopying are other commercial services. Printing and photocopying were received by 72.2% of the total respondents (N = 720), whereas the rest of the respondents (27.8%) did not take advantage of this service. For those who take it, the levels of income of the respondents were 10000–20000 (62.7%), 20001–30000 (29.4%), 30001–40000 (6.7%), 40001–50000 (0.8%), and 60000 plus (0.4%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (62.7%), while the level of income of the least significant respondents was 60000 plus (0.4%). To compare printing and photocopying and respondents' levels of income, the chi-square test was used. There was no statistically significant association between printing and photocopying and the respondents' levels of income ($\chi^2 = 4.936$, df = 4, p = 0.294).

Email and internet browsing are other commercial services. Email and internet browsing were received by 27.6% of the total respondents (N = 720), whereas the rest of the respondents (72.4%) did not take advantage of this service. For those who took it, the levels of income of the respondents were 10000–20000 (66.3%), 20001–30000 (27.1%), 30001–40000 (5.5%), 40001–50000 (1.0%), and 60000 plus (0.0%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (66.3%), while the level of income of the least significant respondents was 60000 plus (0.0%). To compare email and internet browsing and respondents' levels of income, the chi-square test was used. There was a statistically significant association between email and internet browsing and the respondents' levels of income ($\chi^2 = 11.281$, df = 4, p = 0.024).

31.9% of the total respondents (N = 720) used the CV and job application service, while the remaining respondents (68.1%) did not. The respondents' levels of income were 10000–20000 (70.4%), 20001–30000 (23.0%), 30001–40000 (6.1%), 40001–50000 (0.4%), and 60000 plus (0.0%), respectively. In this case, the significant number of the majority of respondents was 10000–20000 (70.4%), while the insignificant number of the respondents was 60000 plus (0.0%). A chi-square test was performed between the CV and job application and the level of income of the respondents. There was no statistically significant relationship between CV and job application and respondents' levels of income ($\chi^2 = 2.282$, df = 4, p = 0.684).

Computer, ICT, and English training are other commercial services. Computer, ICT, and English training was received by 5.7% of the total respondents (N = 720), whereas the rest of

the respondents (94.3%) did not take this service. For those who took the service, the levels of income of the respondents were 10000–20000 (78.0%), 20001–30000 (12.2%), 30001–40000 (9.8%), 40001–50000 (0.0%), and 60000 plus (0.0%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (78.0%), while the level of income of the least significant respondents was 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. The researchers used the chi-square test to compare respondents' levels of income with their computer, ICT, and English training. There was no statistically significant association between computer, ICT, and English training and the respondents' levels of income ($\chi^2 = 2.778$, df = 4, p = 0.596).

Phone calls and video conferencing are also commercial services. 12.2% of the total respondents (N = 720) used the service, but the majority of respondents (87.8%) did not. Among the respondents who took this service, their levels of income were 10000–20000 (61.4%), 20001–30000 (34.1%), 30001–40000 (4.5%), 40001–50000 (0.0%), and 60000 plus (0.0%), respectively. In this case, the level of income of the majority of respondents was 10000–20000 (61.4%), while the levels of income of the least majority of respondents were 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. A chi-square test was performed between phone, video conferencing, and respondents' level of income. There was a statistically significant relationship between phone and video conferencing and the levels of income of respondents ($\chi^2 = 12.548$, df = 4, p = 0.014).

Mobile banking, or banking service, is also a commercial service. Only 27.1% of the total respondents (N = 720) used the service, while the remaining respondents (72.9%) did not. For the respondents who took the service, the levels of income were 10000–20000 (72.3%), 20001–30000 (19.0%), 30001–40000 (8.2%), 40001–50000 (0.5%), and 60000 plus (0.0%), respectively. In this regard, the level of income of the majority of respondents was 10000–20000 (72.3%), while the level of income of the least majority was 60000 plus (0.0%). A chi-square test was performed between mobile banking or banking service and respondents' level of income. There was no statistically significant relationship between mobile banking or banking service and the levels of income of respondents ($\chi^2 = 2.882$, df = 4, p = 0.578).

The scanning and laminating are also commercial services provided by UDCs in the Haor area. 46.9% of the total respondents (N = 720) used the service, compared to the remaining respondents (53.1%) who did not. Among respondents who took this service, the levels of

income of the respondents were 10000–20000 (71.0%), 20001–30000 (21.6%), 30001–40000 (6.8%), 40001–50000 (0.6%), and 60000 plus (0.0%), respectively. In this regard, the level of income of the majority of respondents was 10000–20000 (71.0%), while the level of income of the least majority was 60000 plus (0.0%). A chi-square test was performed between scanning and laminating services and respondents' levels of income. There was no statistically significant relationship between scanning and laminating services and the levels of income of respondents ($\chi^2 = 3.236$, df = 4, $p = 0.519$).

The photography is another commercial service. 39% of the total respondents (N = 720) used the photography service, whereas the remaining respondents (61%) did not. For those who took it, the levels of income of the respondents were 10000-20000 (64.1%), 20001-30000 (25.6%), 30001-40000 (9.6%), 40001-50000 (0.4%), and 60000 plus (0.4%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (64.1%), while the level of income of the least significant respondents was 40001–50000 (0.4%) and 60000 plus (0.4%), respectively. To compare photography and respondents' levels of income, the chi-square test was used. There was a statistically significant association between photography and the respondents' levels of income ($\chi^2 = 24.097$, df = 4, $p < 0.001$).

The online visa application is another commercial service. Only 8.8% of the total respondents (N = 720) used the online visa application or visa service, while the majority of respondents (91.2%) did not. For those who took it, the income levels of the respondents were 10000-20000 (58.7%), 20001-30000 (36.5%), 30001-40000 (4.8%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. In this respect, the levels of income of the most significant respondents were 10000–20000 (58.7%), while the levels of income of the least significant respondents were 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. The researchers used the chi-square test to compare respondents' levels of income with online visa applications or visa services. There was a statistically significant association between online visa application or visa and the respondents' levels of income ($\chi^2 = 11.746$, df = 4, $p = 0.019$).

The e-tickets for air, bus, and rail are another commercial service. Only 20.6% of the total respondents (N = 720) received the e-tickets for the air, bus, and rail services, while the remaining respondents (79.4%) did not use this service. For those who took it, the income levels of the respondents were 10000-20000 (61.5%), 20001-30000 (31.1%), 30001-40000 (6.1%), 40001-50000 (1.4%), and 60000 plus (0.0%), respectively. In this respect, the level

of income of the most significant respondents was 10000–20000 (61.5%), while the level of income of the least significant respondents was 60000 plus (0.0%). The researchers used the chi-square test to compare e-tickets for air, bus, and rail with the respondents' levels of income. There was a statistically significant association between e-tickets for air, bus, and rail and the respondents' levels of income ($\chi^2 = 18.810$, df = 4, p = 0.001).

Insurance services are another commercial service. Only 13.2% of the total respondents (N = 720) used the insurance services, while the majority of respondents (86.8%) did not. For those who took it, the income levels of the respondents were 10000-20000 (82.1%), 20001-30000 (16.8%), 30001-40000 (1.1%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (82.1%), while the level of income of the least significant respondents was 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. To compare insurance services and respondents' levels of income, the chi-square test was used. There was no statistically significant association between insurance services and the respondents' levels of income ($\chi^2 = 6.782$, df = 4, p = 0.148).

Science and technology are another commercial service. Only 11.5% of the total respondents (N = 720) used the science and technology service, while the majority of respondents (88.5%) did not. For those who took it, the income levels of the respondents were 10000-20000 (86.7%), 20001-30000 (7.2%), 30001-40000 (6.0%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (86.7%), while the level of income of the least significant respondents was 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. To compare insurance services and respondents' levels of income, the chi-square test was used. There was a statistically significant association between science and technology and the respondents' levels of income ($\chi^2 = 10.587$, df = 4, p = 0.032).

Industry and commerce are other commercial services. Only 10.6% of the total respondents (N = 720) used the industry and commerce service, while the majority of respondents (89.4%) did not. For those who took it, the levels of income of the respondents were 10000-20000 (55.3%), 20001-30000 (36.8%), 30001-40000 (7.9%), 40001-50000 (0.0%), and 60000 plus (0.0%), respectively. In this respect, the level of income of the most significant respondents was 10000–20000 (55.3%), while the level of income of the least significant

respondents was 40001–50000 (0.0%) and 60000 plus (0.0%), respectively. To compare industry and commerce and respondents' levels of income, the chi-square test was used. There was a statistically significant association between industry and commerce and the respondents' levels of income ($\chi^2 = 16.553$, df = 4, p = 0.002).

Table 32: The commercial services offered by UDCs in haor area with considering income level of the respondents

| Commercial services offered by UDCs | | Income | | | | | |
|---|---|---|---|---|---|---|---|
| | | 10000-20000 Row % | 20001-30000 Row % | 30001-40000 Row % | 40001-50000 Row % | 60000+ Row % | P-value (Chi-square) |
| Type/Data entry | Yes | 62.7 | 29.4 | 6.7 | 0.8 | 0.4 | <0.001 |
| | No | 79.1 | 15.1 | 5.6 | 0.2 | 0.0 | |
| Printing and Photocopying | Yes | 71.9 | 20.4 | 6.9 | 0.6 | 0.2 | 0.294 |
| | No | 77.0 | 19.5 | 3.5 | 0.0 | 0.0 | |
| E-mail and Internet browsing | Yes | 66.3 | 27.1 | 5.5 | 1.0 | 0.0 | 0.024 |
| | No | 76.0 | 17.5 | 6.1 | 0.2 | 0.2 | |
| CV and Job application | Yes | 70.4 | 23.0 | 6.1 | 0.4 | 0.0 | 0.684 |
| | No | 74.7 | 18.8 | 5.9 | 0.4 | 0.2 | |
| Computer/ICT/English Training | Yes | 78.0 | 12.2 | 9.8 | 0.0 | 0.0 | 0.596 |
| | No | 73.0 | 20.6 | 5.7 | 0.4 | 0.1 | |
| Phone/Video Conferencing | Yes | 61.4 | 34.1 | 4.5 | 0.0 | 0.0 | 0.014 |
| | No | 75.0 | 18.2 | 6.2 | 0.5 | 0.2 | |
| Mobile Banking / Bank | Yes | 72.3 | 19.0 | 8.2 | 0.5 | 0.0 | 0.578 |
| | No | 73.7 | 20.6 | 5.1 | 0.4 | 0.2 | |
| Scanning & Laminating | Yes | 71.0 | 21.6 | 6.8 | 0.6 | 0.0 | 0.519 |
| | No | 75.4 | 18.8 | 5.2 | 0.3 | 0.3 | |
| Photography | Yes | 64.1 | 25.6 | 9.6 | 0.4 | 0.4 | <0.001 |
| | No | 79.3 | 16.6 | 3.6 | 0.5 | 0.0 | |
| Online Visa application / visa | Yes | 58.7 | 36.5 | 4.8 | 0.0 | 0.0 | 0.019 |
| | No | 74.7 | 18.6 | 6.1 | 0.5 | 0.2 | |
| E-tickets for air/bus/rail | Yes | 61.5 | 31.1 | 6.1 | 1.4 | 0.0 | 0.001 |
| | No | 76.4 | 17.3 | 5.9 | 0.2 | 0.2 | |
| Insurance services | Yes | 82.1 | 16.8 | 1.1 | 0.0 | 0.0 | 0.148 |
| | No | 72.0 | 20.6 | 6.7 | 0.5 | 0.2 | |
| Science and technology | Yes | 86.7 | 7.2 | 6.0 | 0.0 | 0.0 | 0.032 |
| | No | 71.6 | 21.8 | 6.0 | 0.5 | 0.2 | |
| Industry and commerce | Yes | 55.3 | 36.8 | 7.9 | 0.0 | 0.0 | 0.002 |
| | No | 75.5 | 18.2 | 5.7 | 0.5 | 0.2 | |

Source: Field Survey, April 2023 to June 2024

### 7.3 Union digital services and its effect on women's education: Cross-tab analysis

#### 7.3.1 Union digital services and its effect on women's education: a case of government services provided by UDC

Table 33 indicates the existence of two categories of data: specifically, the government services provided by UDCs in the Haor area and the impact of union digital services on women's education in the Haor region. A total of 720 respondents participated in the survey, with 92.5% of them using the service for birth, death, and citizenship certificates. Conversely, 7.5% of respondents did not engage with this service. Of the respondents utilising this service, 83.9% indicated that the effect of union digital services on women's education, whereas 16.1% expressed disagreement with this assertion. A chi-squared test was conducted to analyse the relationship between birth, death, and citizenship certificate services, as well as the impact of union digital services on women's education. The anticipated cell frequencies were not below 5. The analysis revealed no statistically significant association between the impact of union digital services and the issuance of birth, death, and citizenship certificates ($\chi^2 = 1.372$, df = 1, p = 0.241).

Overseas employment constitutes an additional service provided by the government. A total of 8.6% of respondents (N = 720) reported receiving this service, whereas 91.4% did not receive it. Among the respondents who utilised this service, nearly all indicated that union digital services had a positive effect on women's education, but none expressed disagreement with this assertion. A chi-square test was conducted to analyse the relationship between overseas employment services and the effects of union digital services on women's education. The anticipated cell frequencies were not below 5. A statistically significant association was identified between the effect of union digital services and overseas employment ($\chi^2 = 13.433$, df = 1, $p < 0.05$).

Passports and TIN (Tax Identification Number) certificates are components of government services. A total of 14.2% of respondents (N = 720) used this service, whereas 85.8% did not engage with it. Of the respondents using this service, 94.1% believed that union digital services positively impacted women's education, and 5.9% disagreed with this statement. A chi-square test was conducted to analyse the relationship between passport and TIN (tax) certificate services and the impact of union digital services on women's education. The anticipated cell frequencies were not below 5. A meaningful link was found between the

effect of union digital services and the issuing of passport and TIN (tax) certificates ($\chi^2$ = 9.761, df = 1, $p < 0.05$).

Government services offer information regarding livelihoods. A total of 25.3% of respondents (N = 720) used this service, whereas 74.7% did not engage with it. Of the individuals who used this service, 93.3% indicated that union digital services positively influenced women's education, whereas only 7.7% expressed disagreement. A chi-square test was conducted to analyse the impact of union digital services on women's access to livelihood information services. The anticipated cell frequencies remained above 5. A statistically significant relationship was observed between the impact of union digital services and livelihood information ($\chi^2$ = 13.782, df = 1, $p < 0.05$).

Land is encompassed within the scope of government services. A total of 22.1% of respondents (N = 720) used this service, whereas 77.9% did not engage with it. Of the individuals who used this service, 88.7% indicated that union digital services positively influenced women's education, whereas 11.3% expressed disagreement. A chi-square test was conducted to evaluate the impact of union digital services on women and land services. The anticipated cell frequencies remained above 5. A statistically significant relationship was observed between the impact of union digital services and land ($\chi^2$ = 4.010, df = 1, $p < 0.05$).

The VGD, also referred to as the VGF card, is classified as a government service. Out of the total respondents (N = 720), 52.2% utilised this service, whereas 47.8% did not. Of the respondents who used this service, 79.5% expressed belief in the impact of union digital services on women's education, whereas 20.5% did not agree. A chi-square test was utilised to analyse the comparative effects of union digital services on women in relation to VGD or VGF card services. The anticipated cell frequencies were not below 5. The analysis indicates a statistically significant association between union digital services and the VGD or VGF card, with a chi-square value of 8.904, degrees of freedom of 1, and a p-value less than 0.05. Government services also accept the trade licence. A total of 22.5% of respondents (N = 720) reported receiving this service, while 76.5% did not receive it. 78.4% of users indicated that union digital services had a positive impact on women's education, whereas 21.6% expressed disagreement with this assessment. A chi-square test was conducted to analyse the impact of union digital services on women and trade licensing services. The anticipated cell frequencies remained above 5. A statistically significant relationship exists between the impact of union

digital services and the trade licence, as indicated by $\chi^2 = 3.906$, df = 1, with a p-value less than 0.05.

Land recording is classified as a service provided by the government. A total of 23.9% of respondents (N = 720) used this service, while 76.1% did not engage with it. According to the data, 82% of users believed that union digital services had a positive impact on women's education, whereas 18% expressed disagreement with this assessment. The impact of union digital services on women and land recording services was analysed through a chi-square test. The anticipated cell frequencies were not below 5. The analysis shows that there is no meaningful connection between union digital services and land recording, as shown by the chi-square statistic ($\chi^2 = 0.366$), degrees of freedom (df = 1), and p-value (p = 0.545).

Government services facilitate the acceptance of multiple types of government allowances. A total of 38.2% of respondents (N = 720) used this service, while 61.8% did not have access to it. Of the respondents who used this service, 24.7% expressed disagreement, while 75.3% indicated that union digital services had a positive impact on women's education. A chi-square test was conducted to evaluate the effect of union digital services on women in relation to various government allowance services. The anticipated cell frequencies remained above 5. The analysis indicated a statistically significant effect of union digital services and various government allowances ($\chi^2 = 21.683$, df = 1, $p < 0.05$).

Table 33: whether or not the effect of union digital services on women's education—a case of government services offered by UDCs in haor area

| Government services offered by UDC in Hoar area | | Whether or not the effect of Union Digital Services on women's education | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Birth /death/ citizen certificate | Yes | 83.9 | 16.1 | 0.241 |
| | No | 77.8 | 22.2 | |
| Overseas employment | Yes | 100 | 0.0 | <0.001 |
| | No | 81.9 | 18.1 | |
| Passport/ TIN (tax) certifi cate | Yes | 94.1 | 5.9 | 0.002 |
| | No | 81.7 | 18.3 | |
| Livelihood information | Yes | 92.3 | 7.7 | <0.001 |
| | No | 80.5 | 19.5 | |

| | | | | |
|---|---|---|---|---|
| Land | Yes | 88.7 | 11.3 | 0.045 |
| | No | 82.0 | 18.0 | |
| VGD/VGF card database | Yes | 79.5 | 20.5 | 0.003 |
| | No | 87.8 | 12.2 | |
| Trade license | Yes | 78.4 | 21.6 | 0.048 |
| | No | 84.9 | 15.1 | |
| Land recording | Yes | 82 | 18.0 | 0.545 |
| | No | 83.9 | 16.1 | |
| Various government allowances | Yes | 75.3 | 24.7 | <0.001 |
| | No | 88.5 | 11.5 | |

Source: Field Survey, April 2023 to June 2024

### 7.3.2 Union digital services and their effect on women's education: A case of information services provided by UDCs

Table 34 presents the information services offered by UDCs alongside user perceptions regarding the impact of union digital services on women's education in the Haor region. Of the total respondents (N = 720), 50.6% received the service education, admission test, form fill-out, and exam result, whereas 49.4% did not receive these services. According to the data, 84.3% of respondents using this service acknowledged that union digital services positively impacted women's education, whereas only 15.7% expressed disagreement. The chi-square test was applied to analyse education, admission tests, form filling, exam result services, and the impact of union digital services on women. The anticipated cell frequencies remained at or above 5. The analysis revealed no statistically significant association between the impact of union digital services and the variables of education, admission tests, form completion, or exam results ($\chi^2 = 0.402$, df = 1, $p = 0.526$).

The Government Form Download serves as another information service. A total of 720 respondents were surveyed, of which 43.3% received this service, whereas 56.7% did not receive it. Of the respondents who used this service, approximately 83% believed that union digital services positively impacted women's education, whereas 17% disagreed with this assertion. A chi-square test was conducted to analyse the relationship between overseas employment services and the effects of union digital services on women. The anticipated frequencies for each cell were not below 5. The analysis indicated no statistically significant association between the impact of union digital services and the downloads of government forms ($\chi^2 = 0.084$, df = 1, $p = 0.772$).

Health service is another information service. A total of 42.5% of respondents (n = 720) reported receiving this service, whereas 57.5% indicated that they did not receive it. Of the respondents who used this service, approximately 85.9% believed that union digital services positively impacted women's education, whereas 14.1% disagreed with this assertion. A chi-square test was conducted to analyse the relationship between health services and the impact of union digital services on women. The anticipated cell frequencies were not below 5. The analysis revealed no statistically significant association between the impact of union digital services and the downloads of government forms ($\chi^2 = 2.364$, df = 1, p = 0.124).

A distinct category of information service is agricultural information. A total of 28.9% of respondents (N = 720) used this service, while 71.1% did not engage with it. Approximately 90.4% of respondents who used this service indicated that union digital services positively impact women's education, while 9.6% disagreed with this assessment. A chi-square test was conducted to compare the impact of agriculture information services with that of union digital services on women. The anticipated cell frequencies remained above 5. The analysis revealed a statistically significant association between union digital services and agriculture information services, with a chi-square value of 10.130, degrees of freedom equal to 1, and a p-value less than 0.05.

Additional information services encompass legal and human rights domains. A total of 14% of respondents (N = 720) used this service, whereas 86% did not engage with it. Nearly all respondents who used this service indicated that union digital services positively impacted women's education, but none expressed disagreement with this assertion. A chi-square test was conducted to evaluate the impact of union digital services on women in relation to law and human rights services. The anticipated cell frequencies were all above 5. The analysis shows that union digital services had a meaningful effect on law and human rights services, with a chi-square value of 23.261, 1 degree of freedom, and a p-value less than 0.05.

Another category of information service is tourism. Of the total respondents (N = 720), only 0.6% used this service, whereas 99.4% did not engage with it. Nearly all respondents who used this service indicated that union digital services positively impacted women's education, but none expressed disagreement with this assertion. A chi-square test was conducted to assess the relationship between tourism services and the influence of union digital services on women. The anticipated cell frequencies remained above 5. The analysis showed that there

was no meaningful connection between the effects of union digital services and tourism services, as shown by the chi-square statistic ($\chi^2 = 0.796$), degrees of freedom (df = 1), and p-value (p = 0.372).

Additional information services encompass environmental and disaster management. A total of 13.6% of respondents (N = 720) used this service, while 86.4% did not engage with it. Approximately 90.8% of respondents who used this service indicated that union digital services positively impact women's education, while 9.2% disagreed with this assertion. A chi-square test was conducted to evaluate the impact of union digital services on women in relation to environmental and disaster management services. The anticipated cell frequencies remained above 5. The statistical analysis indicated a significant effect of union digital services and environment and disaster management services ($\chi^2 = 4.435$, df = 1, $p < 0.05$).

Table 34**:** whether or not the effect of Union digital services on women's education—a case of information services offered by UDCs in haor area

| Livelihood or Information services offered by UDC in Haor area | | Whether or not Union Digital Services have an effect on women's education | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Education/ admission test & form / exam result | Yes | 84.3 | 15.7 | 0.526 |
| | No | 82.6 | 17.4 | |
| Govt. forms download | Yes | 83.0 | 17.0 | 0.772 |
| | No | 83.8 | 16.2 | |
| Health | Yes | 85.9 | 14.1 | 0.124 |
| | No | 81.6 | 18.4 | |
| Agricultural Information | Yes | 90.4 | 9.6 | 0.001 |
| | No | 80.7 | 19.3 | |
| Law and human rights | Yes | 100 | 0.0 | <0.001 |
| | No | 80.8 | 19.2 | |
| Tourism | Yes | 100 | 0.0 | 0.372 |
| | No | 83.4 | 16.6 | |
| Environment and Disaster management | Yes | 90.8 | 9.2 | 0.035 |
| | No | 82.3 | 17.7 | |

Source: Field Survey, April 2023 to June 2024

### 7.3.3 Union digital services and their effect on women's education: A case of commercial services offered by UDC

Table 35 illustrates the commercial services provided by UDCs in the haor area and the effect of union digital services on women's education among the respondents, with responses categorised as 'yes' and 'no'. A total of 35.4% of respondents (N = 720) used this type of data entry service, whereas 64.6% did not engage with it. Among the respondents using this service, 80.8% indicated that union digital services positively influenced women's education, whereas 19.2% expressed disagreement. A chi-square test was conducted to evaluate the effect of union digital services on women in relation to type or data entry services. The anticipated cell frequencies remained above 5. The analysis showed that the effect of union digital services combined with typing or data entry services was not significant, as shown by the chi-square statistic ($\chi^2 = 2.068$), degrees of freedom (df = 1), and p-value (p = 0.150).

Printing and photocopying constitute additional commercial services. A total of 72.2% of respondents (N = 720) reported receiving printing and photocopying services, while 27.8% did not use this service. Of the participants who used this service, 81.5% acknowledged that union digital services positively influenced women's education, whereas 18.5% expressed disagreement with this assessment. A chi-square test was conducted to evaluate the impact of union digital services on women in comparison to printing and photocopying services. The anticipated cell frequencies remained above 5. The impact of union digital services alongside printing and photocopying services was found to be statistically significant, with a chi-square value of 5.074, degrees of freedom equal to 1, and a p-value less than 0.05.

Additional commercial services encompass email and internet browsing functionalities. Of the total respondents (N = 720), 27.6% utilised email and internet browsing, while 72.4% did not engage in these activities. According to the data, 78.4% of individuals using this service reported that union digital services positively impact women's education, whereas 21.6% expressed disagreement with this assessment. A chi-square test was employed to compare the impact of union digital services on women in relation to email and internet browsing services. The anticipated cell frequencies were not below 5. The analysis indicated a statistically significant association between union digital services and email and internet browsing services, with a chi-square value of 5.145, degrees of freedom equal to 1, and a p-value less than 0.05.

31.9% of the total respondents (N = 720) utilised the CV and job application services, while the remaining 68.1% did not engage with them. According to the data, 80.4% of individuals using this service reported that union digital services positively influenced women's education, whereas 19.6% expressed disagreement with this statement. A chi-square test was used to analyse the impact of union digital services on women in relation to the use of CVs and job application services. The anticipated cell frequencies were not below 5. The analysis indicated that the relationship between the impact of union digital services and CV and job application services was not statistically significant ($\chi^2 = 2.260$, df = 1, p = 0.133).

Another commercial service includes training in computer skills, information and communication technology (ICT), and English language proficiency. Of the total respondents (N = 720), 5.7% had received training in computers, ICT, and English, while 94.3% had not received such training. According to the data, 97.6% of individuals using this service reported that union digital services positively influence women's education, while only 2.4% expressed disagreement. A chi-square test was conducted to compare the impact of union digital services on women receiving training in computer, ICT, and English services. The anticipated cell frequencies were not below 5. The analysis showed that union digital services and training in computers, ICT, and English had a meaningful effect, with a chi-square value of 6.255, degree of freedom equal to 1, and a p-value less than 0.05.

Phone calls and video conferencing represent distinct commercial services. A total of 12.2% of respondents (N = 720) used the service, whereas 87.8% did not engage with it. According to the data, 97.7% of individuals who used this service reported that union digital services positively impacted women's education, whereas 2.3% expressed disagreement. The effect of union digital services on women was analysed through a chi-square test, comparing phone call services with video conference services. The anticipated cell frequencies were not below 5. The analysis indicates that the influence of union digital services on phone calls and video conferencing services was statistically significant, with a chi-square value of 14.767, degrees of freedom equal to 1, and a p-value less than 0.05. Mobile banking refers to a commercial service that provides banking functionalities through mobile devices. A total of 27.1% of respondents (N = 720) used the service, whereas 72.9% did not engage with it. According to the data, 96.4% of individuals using this service reported that union digital services positively impacted women's education, whereas 3.6% expressed disagreement. A chi-square test was utilised to compare the impact of union digital services on women in relation to mobile

banking or banking services. The anticipated cell frequencies were not below 5. The analysis indicates a statistically significant relationship between union digital services and mobile banking or banking services, with a chi-square value of 32.448, degrees of freedom equal to 1, and a p-value less than 0.05. UDCs in the haor area offer commercial services that include scanning and laminating. Of the total respondents (N = 720), 46.9% used the service, whereas 53.1% did not engage with it. According to survey results, 87.3% of respondents indicated that union digital services positively influenced women's education, whereas 12.7% expressed disagreement. A chi-square test was used to compare the impact of union digital services on women with that of scanning and laminating services. The anticipated cell frequencies were not below 5. The analysis indicated a statistically significant effect of union digital services and scanning and laminating services ($\chi^2 = 6.689$, df = 1, $p < 0.05$).

A different category of commercial service is photography. Of the total respondents (N = 720), 39% used the photographic service, while 61% did not engage with it. Of the participants using this service, 14.2% expressed disagreement, while 85.8% affirmed that union digital services positively impact women's education. A chi-square test was used to compare the impact of union digital services on women versus photographic services. The anticipated cell frequencies were not below 5. The association between union digital services and photographic services did not demonstrate statistical significance ($\chi^2 = 1.756$, df = 1, $p = 0.185$).

Another commercial service is the online visa application process, commonly referred to as a visa. A total of 720 respondents were surveyed, of which 8.8% utilised the online visa application or visa service. Conversely, 91.2% of the respondents did not engage with these services. According to survey results, 98.4% of participants indicated that union digital services positively influenced women's education, while only 1.6% expressed disagreement. A chi-square test was utilised to compare the impact of union digital services on women regarding online visa applications or visa services. It was ensured that the expected cell frequencies were not less than 5. The correlation between the impact of union digital services and online visa applications or visa services demonstrated statistical significance ($\chi^2 = 11.171$, df = 1, $p < 0.05$).

Another commercial service available is electronic tickets for air travel, bus services, and train journeys. A total of 20.6% of respondents (N = 720) used e-tickets for air, bus, and train

transportation. In contrast, 79.4% of respondents did not engage with this service. 69.6% of individuals using this service reported that union digital services positively influence women's education, whereas 30.4% expressed disagreement. The impact of union digital services on women was analysed through a chi-square test, focussing on e-tickets for air, bus, and train services. The anticipated cell frequencies were not below 5. The analysis indicated a statistically significant effect of union digital services and e-tickets on air, bus, and train travel, with a chi-square value of 26.006, degrees of freedom equal to 1, and a p-value less than 0.05.

Insurance services constitute an additional category of commercial offerings. A total of 720 respondents were surveyed, of whom only 13.2% used insurance services. In contrast, 86.8% of respondents did not engage with these services. Of the individuals who utilised this service, 66.3% indicated that union digital services positively impact women's education, whereas 33.7% expressed disagreement regarding this effect. A chi-square test was conducted to analyse the effect of union digital services on women utilising insurance. The anticipated cell frequencies remained above 5. The association between union digital services and insurance services was found to be statistically significant, with a chi-square value of 23.349, degrees of freedom equal to 1, and a p-value less than 0.05.

A distinct category of commercial service encompasses science and technology. A total of 11.5% of respondents (N = 720) used the science and technology service, while 88.5% did not engage with it. According to the survey, 94% of respondents indicated that union digital services positively impacted women's education, whereas 6% expressed disagreement. A chi-square test was conducted to compare the impact of union digital services on women with that of science and technology services. The anticipated cell frequencies were not below 5. The impact of union digital services on women and science and technology services demonstrated statistical significance ($\chi^2 = 7.502$, df = 1, $p < 0.05$).

Industry and commerce represent another service within commercial services. A total of 10.6% of respondents (N = 720) used the industry and commerce service, whereas 89.4% did not engage with it. Of the participants who used this service, 92.1% indicated that union digital services positively influenced women's education, whereas 7.9% expressed disagreement with this statement. A chi-square test was conducted to evaluate the impact of union digital services on women in comparison to industry and commerce services. The

anticipated cell frequencies remained above 5. The statistical analysis indicated a significant effect of union digital services and industry and commerce services, with a chi-square value of 4.590, degrees of freedom equal to 1, and a p-value less than 0.05.

Table 35: The commercial services provided by UDCs in the haor region and the effect of union digital services on women's education.

| Commercial services offered by UDC in Haor area | | Whether or not the effect of Union Digital Services on women's education | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Type/Data entry | Yes | 80.8 | 19.2 | 0.150 |
| | No | 84.9 | 15.1 | |
| Printing and Photocopying | Yes | 81.5 | 18.5 | 0.024 |
| | No | 88.5 | 11.5 | |
| E-mail and Internet browsing | Yes | 78.4 | 21.6 | 0.023 |
| | No | 85.4 | 14.6 | |
| CV and Job application | Yes | 80.4 | 19.6 | 0.133 |
| | No | 84.9 | 15.1 | |
| Computer/ICT/English Training | Yes | 97.6 | 2.4 | 0.012 |
| | No | 82.6 | 17.4 | |
| Phone/Video Conferencing | Yes | 97.7 | 2.3 | <0.001 |
| | No | 81.5 | 18.5 | |
| Mobile Banking / Bank | Yes | 96.4 | 3.6 | <0.001 |
| | No | 78.7 | 21.3 | |
| Scanning & Laminating | Yes | 87.3 | 12.7 | 0.010 |
| | No | 80.1 | 19.9 | |
| Photography | Yes | 85.8 | 14.2 | 0.185 |
| | No | 82.0 | 18.0 | |
| Online Visa application / visa | Yes | 98.4 | 1.6 | 0.001 |
| | No | 82.0 | 18.0 | |
| E-tickets for air/bus/rail | Yes | 69.6 | 30.4 | <0.001 |
| | No | 87.1 | 12.9 | |
| Insurance services | Yes | 66.3 | 33.7 | <0.001 |
| | No | 86.1 | 13.9 | |
| Science and technology | Yes | 94.0 | 6.0 | 0.006 |
| | No | 82.1 | 17.9 | |
| Industry and commerce | Yes | 92.1 | 7.9 | 0.032 |
| | No | 82.5 | 17.5 | |

Source: Field Survey, April 2023 to June 2024.

### 7.4 Effect of union digital services on women's education in the haor region: An analysis of binary logistic regression

A binary logistic regression analysis was conducted to evaluate the impact of union digital services on women's education in the Haor region. A total of nineteen (19) predictors were identified, categorised into three distinct groups of UDC services: government, information, and commercial services. Model 1 included six independent variables: overseas employment, passport or TIN tax certificate, livelihood information, land, VGD/VGF card, trade licence, and various government allowances. Model 2 included two independent variables: agriculture information, law and human rights, and environment and disaster management services.

Model 3 included nine independent variables: printing and photocopying, e-mail and internet browsing, computer/ICT/English language proficiency training, phone/video conferencing, mobile banking, scanning and laminating, online visa application, e-tickets for air, bus, and train, and insurance service. The subsequent tables present the outcomes of the binary logistic regression analysis, which identifies the risk factors associated with the impact of union digital services on women's education in haor regions. Prior to making a decision based on the binary logistic regression, this study conducted an analysis of the model's appropriateness. This analysis included the Omnibus test for model adequacy, the Hosmer-Lemeshow goodness of fit test, the percentage accuracy of classification, and the Nagelkerke R-square. The omnibus test shows significance, suggesting that the collection of covariates explains a higher amount of variation in the dependent variable. The Hosmer-Lemeshow goodness of fit test demonstrates insignificance at the 5% level.

#### Model 1: Government services provided by UDC and their effect on women's education

Model 1 incorporates a total of six predictors, with the study identifying two distinct response types: 'yes' and 'no'. 'Yes' indicates the individuals who have received this service, whereas 'No' denotes those who have not received it. No category responses are regarded as references in this context. Table 36 demonstrates that three out of the six predictors exhibit statistical significance. The predictor of passport and TIN (tax) certificate significantly impacts women in the haor area, particularly regarding their educational benefits, as indicated by a p-value of 0.025, which is less than the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor. The odds ratio of 0.328 signifies that the probability

of success associated with women's educational status is 0.328 times lower for individuals who received education-related services compared to those who did not receive them. The predictor of livelihood information significantly impacts women in the haor area, particularly regarding their educational benefits, as indicated by a p-value of <0.001, which is less than the threshold of <0.05. The odds ratio of 0.226 signifies that the probability of success associated with women's education status is 0.226 times lower for individuals who received education (yes) in comparison to those who did not receive education-related services (no). Additionally, another predictor is the various government allowances, which impact women's education, as indicated by a p-value of <0.001 (<0.05). The odds ratio of 3.555 indicates that individuals who received various government allowances have a likelihood of success in women's education status that is 3.555 times greater than those who did not receive such allowances.

Table 36: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | P-Value | OR Exp(B) | 95% C.I. (lower-upper) |
|---|---|---|---|---|
| Passport/ TIN (tax) certificate | Yes | 0.025 | 0.328 | (0.124-0.868) |
| | No | - | Ref. | - |
| Livelihood information | Yes | <0.001 | 0.226 | (0.108-0.473) |
| | No | - | Ref. | - |
| Land | Yes | 0.571 | 1.209 | (0.627-2.331) |
| | No | - | Ref. | - |
| VGD/VGF card database | Yes | 0.138 | 1.448 | (0.888-2.360) |
| | No | - | Ref. | - |
| Trade license | Yes | 0.832 | 1.063 | (0.607-1.861) |
| | No | - | Ref. | - |
| Various government allowances | Yes | <0.001 | 3.555 | (2.133-5.926) |
| | No | - | Ref. | - |

Source: Field Survey, April 2023 to June 2024

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2 = 66.149$, df = 6, $p < 0.001$), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-

Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2$ = 20.432, df = 07, P = 0.005) poorly fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 14.8% of the criterion variable's change. The estimated percentage of classification accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| **Model Summary** | |
|---|---|
| Omnibus test of model adequacy | Chi-square=66.149, DF=6, P-value<0.001 |
| Hosmer-Lemeshow goodness of fit | Chi-square= 20.432, DF= 07, P-value=.005 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 579.430 |
| Cox & Snell R Square | 0.088 |
| Nagelkerke R-square | 0.148 |

**Model 2: Information services provided by UDC and their effect on women's education**

Model 2 incorporates two predictors, and the analysis identified two distinct response types: 'yes' and 'no'. 'Yes' indicates the individuals who have received this service, whereas 'No' denotes those who have not received it. No category responses are regarded as references in this context. Table 37 demonstrates that one predictor exhibits significance in relation to two predictors. The predictor associated with agricultural information has a significant impact on women's education in the haor area, as evidenced by a p-value of 0.016, which is below the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor variable. The odds ratio of 0.489 signifies that the probability of success associated with women's education status is 0.489 times lower for individuals who received it compared to those who did not receive it.

Table 37: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | P-Value | OR Exp(B) | 95% CI (lower-upper) |
|---|---|---|---|---|
| Agricultural Information | Yes | 0.016 | 0.489 | (0.273-0.876) |
| | No | - | Ref. | - |
| Environment and Disaster management | Yes | 0.524 | 0.766 | (0.338-1.739) |
| | No | - | Ref. | - |

Source: Field Survey, April 2023 to June 2023

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2$ = 11.469, df = 2, p = 0.003), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2$ = 0.672, df = 02, P = 0.714) adequately fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 2.7% of the criterion variable's change. The estimated percentage of classification accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| Model Summary | |
|---|---|
| Omnibus test of model adequacy | Chi-square=11.469, DF=2, P-value = 0.003 |
| Hosmer-Lemeshow goodness of fit | Chi-square= 0.672, DF= 02, P-value=.714 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 634.110 |
| Cox & Snell R Square | 0.016 |
| Nagelkerke R-square | 0.027 |

**Model 3: Commercial services provided by UDC and their effect on women's education**

Model 3 incorporates a total of nine predictors, with the study identifying two distinct response types: 'yes' and 'no'. 'Yes' indicates the individuals who received this service, whereas 'No' denotes those who did not receive it. 'No' category responses are regarded as references in this context. Table 38 demonstrates that out of nine predictors, three are statistically significant. The predictor associated with printing and photocopying has a

significant impact on women in the Haor area, particularly concerning their educational benefits, as evidenced by a p-value of 0.011, which is below the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor. The odds ratio of 2.103 signifies that the probability of the status regarding women's education is 2.103 times greater for individuals who have received them (yes) in comparison to those who have not received them (no). Another predictor identified is mobile banking, which influences women's education, as evidenced by a p-value of 0.001, indicating statistical significance because it is less than 0.05. The odds ratio of 0.238 indicates that mobile banking or bank accounts for individuals who received it (yes) are 0.238 times lower in comparison to those who did not receive it (no). This finding suggests a correlation with the status of women's education in the haor area. Another predictor identified is the use of e-tickets for air, train, and bus travel, which impacts women's education in haor areas, as indicated by a p-value of less than 0.001 (<0.05). The odds ratio of 5.235 indicates that individuals who received e-tickets for air, train, and bus travel are 5.235 times more likely to experience an effect on women's education in the Haor region compared to those who did not receive e-tickets.

Table 38: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | p-value | OR (Exp(B)) | 95% CI (lower, upper) |
|---|---|---|---|---|
| Printing and Photocopying | Yes | .011 | 2.103 | (1.190-3.717) |
| | No | - | Ref. | - |
| E-mail and Internet browsing | Yes | .214 | .594 | (0.262-1.349) |
| | No | - | Ref. | - |
| Computer/ICT/English Training | Yes | .217 | .267 | (0.033-2.179) |
| | No | - | Ref. | - |
| Phone/Video Conferencing | Yes | .576 | .590 | (0.093-3.748) |
| | No | - | Ref. | - |
| Mobile Banking / Bank | Yes | .001 | .238 | (0.101-0.560) |
| | No | - | Ref. | - |
| Scanning & Laminating | Yes | .407 | .816 | (0.504-1.319) |
| | No | - | Ref. | - |
| Online Visa application / visa | Yes | .495 | .398 | (0.028-5.585) |
| | No | - | Ref. | - |
| E-tickets for air/bus/rail | Yes | .000 | 5.235 | (2.240-12.237) |
| | No | | Ref. | |

| | | | | |
|---|---|---|---|---|
| Insurance services | Yes | .584 | 1.277 | (0.532-3.064) |
| | No | | Ref. | |
| Science and technology | Yes | .323 | .581 | (0.198-1.706) |
| | No | | Ref. | |
| Industry and commerce | Yes | .093 | .388 | (0.129-1.170) |
| | No | | Ref. | |

Source: Field Survey, April 2023 to June 2024

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2 = 97.693$, df = 11, $p < 0.001$), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2 = 26.103$, df = 07, $P < 0.001$) poorly fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 21.4% of the criterion variable's change. The estimated percentage of classification accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| **Model Summary** | |
|---|---|
| Omnibus test of model adequacy | Chi-square=97.693, DF=11, P-value <0.001 |
| Hosmer and Lemeshow goodness of fit | Chi-square= 26.103, DF= 07, P-value <0.001 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 547.887 |
| Cox & Snell R Square | 0.127 |
| Nagelkerke R-square | 0.214 |

### 7.5 Union digital services and its effect on women's education in the haor region: qualitative findings

The Union Digital Centre in the Haor region has made a notable contribution to women's education through the provision of digital services. The services provided encompass public examination results, online applications for college and university admissions, printing and photocopying literature, online registration, MPO applications, and facilities for applications to higher education institutions. The initiative aims to enhance awareness and facilitate improved opportunities for women's education, motivating them to pursue applications for school, college, or university admission. The following sections present a discussion of the major findings.

### 7.5.1 Education for females

The UDC has contributed to the progress of female education in a limited capacity. The UDC acts as a central resource for knowledge and information in the educational sector, particularly regarding merit. The residents of the Haor region possess limited understanding regarding various components of digital Bangladesh. UDC provides a comprehensive array of information regarding the digital transformation occurring in Bangladesh. This indicates a shift in the educational approach. A participant stated

> "The UDC contributes positively to the enhancement of educational opportunities for women and girls. Historically, individuals from the Haor region relocated to Kishoreganj to seek educational opportunities at Gurudayal Government College. Women in the Haor region are currently engaged in educational pursuits at esteemed public and private universities in Dhaka and various other major cities across the country. UDC serves a significant function in this context. Women and girls use the UDC to seek information. They subsequently submitted an application for admission. Upon securing acceptance of their application, they will experience various benefits. As a result, they successfully gained admission to colleges with the assistance of UDCs. In the past ten years, the enrolment rate for girls in higher education within the Haor region has experienced a notable increase of approximately 15 to 20 per cent" (IDI XXXVII).

The UDC operates as a central hub and is integral to the daily lives of the local population. The UDC provides extensive government information designed to empower individuals in the exercise of their rights and the pursuit of opportunities. UDC provides a range of services, allowing clients to select their specific requirements. UDC offers web-based educational services specifically designed for women living in the Haor region. Consequently, the support provided by UDC enhances the quality of women's education within the local region. One participant communicated

> "The implementation of union digital services significantly influences the educational opportunities available to women residing in the Haor region. The materials offer access to admission information, downloadable registration forms, and a detailed overview of the application process, among other resources. The communication

infrastructure in the haor region is inadequate. When a woman travels to an upazila centre or town, she is required to allocate additional time and financial resources. The UDC significantly reduced the total time and expenses for women, thereby enhancing their pursuit of education" (IDI-IX).

In rural regions, low-income populations often do not prioritise women's education. Government measures actively promote and foster female education. The GOB offers female students' free books and a financial stipend. The government has enacted legislation that prohibits the marriage of individuals who are under the legal age limit. Local authorities and elected officials work together to address the issue of child marriage. The advancement of women's education presents a complex challenge; however, substantial governmental efforts indicate a potential for progress in this area. A participant stated.

"In the context of our country, especially in rural areas, there existed a widespread perception that the education of women would impose a financial strain on their families, due to the prevailing assumption that women would ultimately return to their husbands' households following marriage. The UDC has streamlined the processes for enrolment applications, admission requests, fee payments, and access to test results. The UDC offers printing services as part of its operational capabilities. This development signifies significant progress for women in the field of education. Consequently, female students and their guardians encourage the continuation of girls' education. Both direct and indirect benefits are obtained. In light of the government's continuous initiatives aimed at improving services, it is expected that the UDC will further strengthen its role. In the near future, we will have the ability to implement it successfully in all communities and achieve its final goal" (IDI XXXVIII).

The Union Digital Centre serves as a significant platform impacting the education of women and girls. Online services are offered for registration, admissions examinations, examination results, and applications to medical colleges and universities. A participant stated that

"The UDC is enhancing educational opportunities and advancing digital technology literacy through the provision of online educational services targeted at women living in the Haor region. The services provided encompass access to public examination results, university admissions, medical college applications, and applications to

prestigious schools and colleges. Despite the limited dissemination of knowledge, progress is being made; however, further efforts are necessary" (IDI VII).

The initiatives undertaken by UDCs to raise awareness and provide educational services have significantly improved educational attainment among women and girls, particularly in areas where females constitute the majority population. The implementation of these services has led to an increase in literacy rates and has streamlined online procedures for admission, application, and registration. Despite these improvements, the educational achievement of women and girls continues to increase consistently. A participant indicated

"UDCs have significantly improved the educational outcomes for women and girls through the provision of education-related services, thereby enhancing awareness and literacy rates. The expansion of online admission and registration has made a significant contribution; however, some proponents argue that its effect is limited" (IDI VIII).

The UDC is instrumental in enhancing educational opportunities in rural areas by providing access to schools, colleges, and universities. The indirect influence on the education of women and girls is manifested through the dissemination of knowledge regarding the significance of education. While variations exist in the delivery of services, the priority given to women remains consistent. There exists a necessity for an advocacy initiative focused on increasing public awareness of UDC services and enhancing the quality of education for girls. UDC positively influences the educational opportunities for women in the Haor region. A participant indicated

"Women entrepreneurs need a minimum level of educational attainment; hence, females are urged to pursue education. Prior to the initiation of the UDC initiative, there was no opportunity to apply to several esteemed institutions, colleges, and universities. UDC offers this possibility directly to haor residents, enabling them to apply for admission to esteemed public educational institutions. As a result, the women's enrolment rate in higher education in haor regions has risen by 15 to 20 per cent during the past 14 years". He also added that

> "UDC promotes the education of women and girls by providing access to schools and universities; thereby, it enhances educational opportunities. Further efforts are necessary to enhance awareness and advance the education of women" (IDI IX).

Educational institutions in the Haor region have made significant progress, with an increased emphasis on prioritising women. The university offers online access to academic transcripts, and a non-governmental organisation facilitates support for female education. The union digital centre improves the efficiency of form completion, admission registration, learning achievements, and financial services. The utilisation of mobile banking and UDC services significantly influences educational opportunities for women and girls, facilitating their access to online admissions and government stipends. Women are taking maternity leave concurrently with the expansion of entrepreneurship. A participant indicated

> "The educational institutions in the Haor area have made notable progress, emphasising women's empowerment. UDC provides online access to academic transcripts, facilitates results verification, and offers support for non-governmental organisations (NGOs). Mobile banking facilitates scholarships, and UDC services have a substantial impact on the education of women and girls" (IDI X).

The UDC enhances female education in the Haor region through the provision of educational resources and services, the development of instructional materials, and the promotion of educational significance via activities including assistance with form completion, admission processes, and result tracking. A participant indicated

> "The union digital centre provides support for female education in the haor area through services that include assistance with form submission, admission applications, and result verification. The effect is constrained by the lack of available free services" (IDI XI).

In conclusion, UDC offers services irrespective of gender considerations. The UDC provides digital educational services. Educators working in private educational institutions used UDC to submit applications for Monthly Payment Orders (MPO). The UDC performance and contribution exhibit non-uniformity across the entire area. The research indicates that the success and performance of UDC in terms of contribution are dependent on the knowledge,

skills, and investment levels of entrepreneurs. The UDC demonstrates a beneficial influence on women's education within the Haor region.

### 7.6 Summary of the chapter

This chapter discusses the socio-economic attributes of the study's respondents. The quantitative data explains how the demographic characteristics of the respondents relate to the services offered by UDC in the haor regions. The focus is on users' perceptions of union digital services, their impact on women's education, and the predictors of covariates. The qualitative data presents a comprehensive analysis of the outcomes associated with union digital services and their implications for women's education, as expressed by key stakeholders. This report includes insights from the UP chairman, UDC entrepreneurs, representatives from civil society, the Deputy Director of Local Government, Deputy Commissioners, Additional Deputy Commissioners, Upazila Nirbahi Officer, and ICT specialists. The study culminates in an analysis of the influence of UDC services on the educational opportunities for women in haor regions. UDCs are dedicated to the advancement of women's education in haor regions. The research reveals that multiple factors influence the progression of women's education in haor regions. The elements under consideration include the contributions of UDC, the calibre of educators, the adequacy of educational infrastructure, the state of communications infrastructure, the effectiveness of local education administration oversight, the level of guardian awareness, and student attendance at schools and colleges in their respective areas.

# CHAPTER EIGHT

# EFFECT OF UDC SERVICES ON HAOR WOMEN: STATUS OF EMPLOYMENT

## 8.0 Introduction

This chapter presents both quantitative and qualitative data regarding the effect of union digital services on women's employment in haor regions. The quantitative data highlights user perceptions regarding union digital services and their effect on women's employment in haor areas, along with the predictors of covariates. The qualitative data analyses the perspectives of various stakeholders regarding union digital services and their impact on women's employment in haor regions. The demographic characteristics of the respondents and the relationship between independent co-variates and demographic features of the respondents are outlined in the previous chapter.

## 8.1 Union digital services and its effect on women's employment: Crosstab analysis

### 8.1.1 Union digital services and its effect on women's employment: a case of government services provided by UDC

Table 39 indicates the existence of two categories of data: specifically, the government services provided by UDCs in the Haor area and the effect of union digital services on women's employment in the Haor regions. Of the total respondents (N = 720), 92.5% used the service for birth, death, and citizenship certificates, whereas 7.5% did not engage with it. Of the respondents who utilised this service, 83.9% indicated that they believed union digital services positively influenced women's employment, whereas 16.1% expressed disagreement with this assertion. A chi-square test was conducted to analyse the relationship between birth, death, and citizenship certificate services, as well as the impact of union digital services on women's employment. The anticipated cell frequencies were not below 5. The analysis indicated no statistically significant association between the impact of union digital services and the issuance of birth, death, and citizenship certificates ($\chi^2 = 1.372$, df = 1, p = 0.241).

Overseas employment constitutes another service provided by the government services. A total of 8.6% of respondents (N = 720) reported having received this service, whereas 91.4% indicated that they did not receive it. Among the respondents who used this service, nearly 100% believed that the effect of union digital services on women's employment, whereas

0.0% disagreed with this statement. A chi-square test was conducted to examine the relationship between overseas employment services and the influence of union digital services on women. The anticipated cell frequencies were not below 5. A statistically significant association was observed between the effect of union digital services and overseas employment ($\chi^2 = 13.433$, df = 1, $p < 0.05$).

Passports and Tax Identification Number (TIN) certificates are components of government services. A total of 14.2% of respondents (N = 720) used this service, whereas 85.8% did not engage with it. Of the respondents who used this service, 94.1% believed that union digital services positively impacted women's employment, and 5.9% disagreed with this assertion. A chi-squared test was conducted to analyse the relationship between passport and TIN (tax) certificate services and the impact of union digital services on women's employment. The anticipated cell frequencies were not below 5. A meaningful connection was found between the effect of union digital services and the issuing of passport and TIN (tax) certificates ($\chi^2 = 9.761$, df = 1, $p < 0.05$).

Government services offer information pertaining to livelihoods. A total of 25.3% of respondents (N = 720) used this service, whereas 74.7% did not engage with it. Of the individuals who used this service, 93.3% indicated that the effect of union digital services on women's employment, whereas only 7.7% expressed disagreement. A chi-square test was conducted to evaluate the impact of union digital services on women's access to livelihood information services. The anticipated cell frequencies remained above 5. A statistically significant relationship was observed between the impact of union digital services on women's employment and livelihood information ($\chi^2 = 13.782$, df = 1, $p < 0.05$).

Land is incorporated within the scope of government services. A total of 22.1% of respondents (N = 720) used this service, whereas 77.9% did not engage with it. A survey of service users indicated that 88.7% believed union digital services had effect on women's employment, whereas 11.3% expressed disagreement. A chi-square test was conducted to evaluate the impact of union digital services on women's employment and land services. The anticipated cell frequencies remained above 5. A statistically significant relationship was identified between the impact of union digital services on women's employment and land, with a chi-square value of 4.010, degrees of freedom equal to 1, and a p-value less than 0.05.

The VGD, also referred to as the VGF card, is classified as a government service. More than half of the total respondents (N = 720) utilised this service, accounting for 52.2%, while the remaining 47.8% did not engage with it. Of the respondents using this service, 79.5% acknowledged the positive impact of union digital services on women's employment, whereas 20.5% expressed disagreement. A chi-square test was utilised to analyse the comparative effects of union digital services on women's employment in relation to VGD or VGF card services. The anticipated cell frequencies were not below 5. The association between the effect of union digital services on women's employment and the VGD or VGF card is statistically significant, as indicated by the chi-square statistic ($\chi^2 = 8.904$, df = 1, $p < 0.05$).

Government services also recognise the trade license. A total of 22.5% of respondents (N = 720) reported receiving this service, while 76.5% did not receive it. Of the respondents who used this service, 78.4% indicated that the effect of union digital services on women's employment. Conversely, 21.6% of users expressed disagreement with this assessment. A chi-square test was conducted to evaluate the impact of union digital services on women's employment in relation to trade licensing services. The anticipated cell frequencies remained above 5. A statistically significant relationship exists between the impact of union digital services on women's employment and the trade licence, as indicated by $\chi^2 = 3.906$, df = 1, $p < 0.05$.

Land recording is classified as a government service. A total of 23.9% of respondents (N = 720) used this service, while 76.1% did not engage with it. Of the individuals who used this service, 18% expressed disagreement, and 82% acknowledged that the effect of union digital services on women's employment. The impact of union digital services on women's employment and land recording services was analysed through a chi-square test. The anticipated cell frequencies were not below 5. The analysis shows that there is no meaningful connection between the effect of union digital services on women's employment and land recording, as shown by the chi-square statistic ($\chi^2 = 0.366$), degrees of freedom (df = 1), and p-value ($p = 0.545$).

Government services facilitate the acceptance of multiple types of government allowances. A total of 38.2% of respondents (N = 720) used this service, while 61.8% did not have access to it. Of the respondents who used this service, 24.7% expressed disagreement, while 75.3% indicated that union digital services have an effect on women's employment. A chi-square

test was conducted to analyse the effects of union digital services on women's employment in relation to various government allowance services. The anticipated cell frequencies remained above 5. The analysis indicated a statistically significant effect of union digital services on women's employment and various government allowances ($\chi^2 = 21.683$, df = 1, $p < 0.05$).

Table 39: whether or not the effect of union digital services on women's employment—a case of government services offered by UDCs in haor area

| Government services offered by UDC in Hoar area | | Whether or not the effect of Union Digital Services on women's employment | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Birth /death/ citizen certificate | Yes | 83.9 | 16.1 | 0.241 |
| | No | 77.8 | 22.2 | |
| Overseas employment | Yes | 100 | 0.0 | <0.001 |
| | No | 81.9 | 18.1 | |
| Passport/ TIN (tax) certifi cate | Yes | 94.1 | 5.9 | 0.002 |
| | No | 81.7 | 18.3 | |
| Livelihood information | Yes | 92.3 | 7.7 | <0.001 |
| | No | 80.5 | 19.5 | |
| Land | Yes | 88.7 | 11.3 | 0.045 |
| | No | 82.0 | 18.0 | |
| VGD/VGF card database | Yes | 79.5 | 20.5 | 0.003 |
| | No | 87.8 | 12.2 | |
| Trade license | Yes | 78.4 | 21.6 | 0.048 |
| | No | 84.9 | 15.1 | |
| Land recording | Yes | 82 | 18.0 | 0.545 |
| | No | 83.9 | 16.1 | |
| Various government allowances | Yes | 75.3 | 24.7 | <0.001 |
| | No | 88.5 | 11.5 | |

Source: Field Survey, April 2023 to June 2024

### 8.1.2 Union digital services and their effect on women: A case of information services provided by UDCs

Table 40 presents the information services offered by UDCs, along with user perceptions regarding the impact of union digital services on women's employment in the Haor region. Of the total respondents (N = 720), 50.6% completed the service education, admission test, form fill-out, and exam result, whereas 49.4% did not complete these tasks. According to the data,

84.3% of respondents who utilised this service indicated that union digital services positively influenced women's employment, whereas 15.7% expressed disagreement. The chi-square test was applied to examine the relationship between education, admission tests, form filling, exam result services, and the impact of union digital services on women. The anticipated cell frequencies remained above 5. The analysis revealed no statistically significant association between the impact of union digital services and the variables of education, admission tests, form completion, or exam results ($\chi^2 = 0.402$, df = 1, p = 0.526).

The Government Form Download serves as another information service. A total of 43.3% of respondents (N = 720) reported receiving this service, whereas 56.7% did not receive it. Of the respondents who used this service, approximately 83% believed that union digital services positively influenced women's employment, whereas 17% disagreed with this assertion. A chi-square test was conducted to examine the relationship between overseas employment services and the influence of union digital services on women's employment. The anticipated cell frequencies were not below 5. The analysis revealed no statistically significant association between the impact of union digital services on women's employment and the number of government form downloads ($\chi^2 = 0.084$, df = 1, p = 0.772).

Health service as another information service. A total of 42.5% of respondents (n = 720) reported receiving this service, whereas 57.5% did not receive it. Of the respondents who used this service, approximately 85.9% believed that the effect of union digital services on women's employment, whereas 14.1% disagreed with this assertion. A chi-square test was conducted to analyse the relationship between health services and the impact of union digital services for women's employment. The anticipated cell frequencies were not below 5. The analysis revealed no statistically significant association between the impact of union digital services on women's employment and the number of government form downloads ($\chi^2 = 2.364$, df = 1, p = 0.124).

A distinct category of information service is agricultural information. A total of 28.9% of respondents (N = 720) used this service, while 71.1% did not engage with it. Approximately 90.4% of respondents who utilised this service indicated that union digital services had an impact on women's employment, and 9.6% disagreed with this assertion. A chi-square test was conducted to compare agricultural information services with the impact of union digital services on women. The anticipated cell frequencies remained above 5. The association

between the effect of union digital services on women's employment and agriculture information services was found to be statistically significant, with a chi-square value of 10.130, degrees of freedom equal to 1, and a p-value less than 0.05.

Further information services encompass legal and human rights aspects. Only 14% of the 720 respondents surveyed used this service, while 86% did not engage with it. Nearly all respondents who used this service indicated that the effect of union digital services on women's employment, but none expressed disagreement with this assertion. A chi-square test was conducted to evaluate the impact of union digital services on women's employment in relation to law and human rights services. The anticipated cell frequencies remained above threshold 5. The impact of union digital services on women's employment and law and human rights services demonstrated statistical significance ($\chi^2 = 23.261$, $df = 1$, $p < 0.05$).

Another category of information service is tourism. A total of 720 respondents were surveyed, with only 0.6% utilising this service, whereas 99.4% did not engage with it. Nearly all respondents who utilised this service indicated that the effect of union digital services on women's employment, with none expressing disagreement with this assertion. A chi-square test was conducted to assess the relationship between tourism services and the influence of union digital services on women's employment. The anticipated cell frequencies remained above 5. The analysis showed that there was no meaningful connection between the effects of union digital services on women's employment and tourism services, as shown by the chi-square statistic ($\chi^2 = 0.796$), degrees of freedom ($df = 1$), and p-value ($p = 0.372$).

Other information services encompass environmental and disaster management. A total of 13.6% of respondents ($N = 720$) used this service, while 86.4% did not engage with it. Approximately 90.8% of respondents who utilised this service indicated that union digital services influenced women's employment, and 9.2% disagreed with this assertion. A chi-square test was conducted to evaluate the impact of union digital services on women's employment in relation to environmental and disaster management services. The anticipated cell frequencies remained above 5. The analysis showed that the effect of union digital services on women's employment and environment and disaster management services had a significant impact, with a chi-square value of 4.435, degree of freedom equal to 1, and a p-value less than 0.05.

Table 40**:** whether or not the effect of Union digital services on women's employment—a case of information services offered by UDCs in haor area

| Livelihood or Information services offered by UDC in Haor area | | Whether or not Union Digital Services have an effect on women's employment | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Education/ admission test & form / exam result | Yes | 84.3 | 15.7 | 0.526 |
| | No | 82.6 | 17.4 | |
| Govt. forms download | Yes | 83.0 | 17.0 | 0.772 |
| | No | 83.8 | 16.2 | |
| Health | Yes | 85.9 | 14.1 | 0.124 |
| | No | 81.6 | 18.4 | |
| Agricultural Information | Yes | 90.4 | 9.6 | 0.001 |
| | No | 80.7 | 19.3 | |
| Law and human rights | Yes | 100 | 0.0 | <0.001 |
| | No | 80.8 | 19.2 | |
| Tourism | Yes | 100 | 0.0 | 0.372 |
| | No | 83.4 | 16.6 | |
| Environment and Disaster management | Yes | 90.8 | 9.2 | 0.035 |
| | No | 82.3 | 17.7 | |

Source: Field Survey, April 2023 to June 2024

### 8.1.3 Union digital services and their effect on women: A case of commercial services offered by UDC

Table 41 demonstrates the commercial services offered by UDCs in the haor area and the impact of union digital services on women's employment among the respondents, with both responses including 'yes' and 'no.'.35.4% of the total respondents (N = 720) used this type of data entry service, while the remaining respondents (64.6%) did not. Of the respondents who received this service, 80.8% believed that union digital services impacted women's employment, while only 19.2% disagreed. A chi-square test was used to compare the impact of union digital services on women's employment with type or data entry services. The predicted cell frequencies did not fall below 5. The effect of union digital services on women's employment and typing or data entry services was not statistically significant ($\chi^2$ = 2.068, df = 1, p = 0.150).

Printing and photocopying are other commercial services. Printing and photocopying were received by 72.2% of the total respondents (N = 720), whereas the rest of the respondents (27.8%) did not receive this service. Among those who received this service, 81.5% believed that union digital services had an impact on women's employment, while only 18.5% of those who used it disagreed. A chi-square test was used to compare the effect of union digital services on women's employment with printing and photocopying services. The predicted cell frequencies did not fall below 5. The effect of union digital services on women's employment and printing and photocopying services was statistically significant ($\chi^2 = 5.074$, $df = 1$, $p < 0.05$).

Other commercial services include email and internet browsing. 27.6% of the total respondents (N = 720) used email and internet browsing, whereas the remaining 72.4% did not. 78.4% of people who used this service stated that union digital services had an effect on women's employment, while only 21.6% disagreed. To compare the effect of union digital services on women's employment with email and internet browsing services, a chi-square test was used. The expected cell frequencies were not less than 5. The effect of union digital services on women's employment, as well as email and internet browsing services, had a statistically significant association ($\chi^2 = 5.145$, $df = 1$, $p < 0.05$).

Further, 31.9% of all respondents (N = 720) used the CV and job application service, whereas the remaining respondents (68.1%) did not. 80.4% of individuals who used this service stated that union digital services had an impact on women's employment, while only 19.6% disagreed. A chi-square test was employed to compare the effect of union digital services on women's employment with the use of CV and job application services. The expected cell frequencies were not less than 5. The relationship between the effect of union digital services and CV and job application services was not statistically significant ($\chi^2 = 2.260$, $df = 1$, $p = 0.133$).

Another commercial service is computer, ICT, and English training. 5.7% of the total respondents (N = 720) had computer, ICT, and English training, whereas the remaining respondents (94.3%) did not. 97.6% of people who used this service stated that union digital services had an impact on women's employment, whereas only 2.4% disagreed. To compare the effect of union digital services on women's employment with computer, ICT, and English language proficiency training services, a chi-square test was performed. The expected cell

frequencies were not less than 5. The impact of union digital services on women's employment and computer, ICT, and English language proficiency training services was statistically significant ($\chi^2 = 6.255$, df = 1, $p < 0.05$).

Phone calls and video conferencing are both commercial services. 12.2% of the total respondents (N = 720) made use of the service, while the remaining 87.8% did not. 97.7% of people who used this service stated that union digital services had an effect on women's employment, whereas only 2.3% disagreed. The impact of union digital services on women's employment was compared using a chi-square test with phone call and video conference services. The expected cell frequencies were not less than 5. The impact of union digital services on women's employment and phone calls and video conferencing services was statistically significant ($\chi^2 = 14.767$, df = 1, $p < 0.05$).

Mobile banking, or banking service, is a commercial service. Only 27.1% of the total respondents (N = 720) used the service, while the remaining 72.9% did not. 96.4% of people who used this service stated that union digital services had an effect on women's employment, whereas just 3.6% disagreed. To compare the effect of union digital services on women's employment with mobile banking or banking services, a chi-square test was employed. The expected cell frequencies were not less than 5. The effect of union digital services on women's employment and mobile banking or banking services had a statistically significant relationship ($\chi^2 = 32.448$, df = 1, $p < 0.05$).

The scanning and laminating are also commercial services provided by UDCs in the haor area. 46.9% of the total respondents (N = 720) used the service, while the remaining 53.1% did not. 87.3% of respondents who used this service stated that union digital services had an impact on women's employment, while only 12.7% disagreed. To compare the impact of union digital services on women's employment with scanning and laminating services, a chi-square test was employed. The expected cell frequencies were not less than 5. The effect of union digital services on women's employment and scanning and laminating services was statistically significant ($\chi^2 = 6.689$, df = 1, $p < 0.05$).

Another type of commercial service is photography. 39% of the total respondents (N = 720) used the photographic service, whereas the remaining respondents (61%) did not. Only 14.2% of those who used this service disagreed, with 85.8% believing that union digital

services have an effect on women's employment. To compare the effect of union digital services on women's employment with photographic services, a chi-square test was employed. The expected cell frequencies were not less than 5. The relationship between the effect of union digital services on women's employment and photographic services was not statistically significant ($\chi^2 = 1.756$, df = 1, $p = 0.185$).

Another commercial service is the online visa application, or visa. Only 8.8% of the total respondents (N = 720) used the online visa application or visa service, while the remaining respondents (91.2%) did not. 98.4% of people who used this service stated that union digital services had an impact on women's employment, whereas only 1.6% disagreed. To compare the effect of union digital services on women's employment with online visa applications or visa services, a chi-square test was employed. The expected cell frequencies were not less than 5. The relationship between the effect of union digital services on women's employment and online visa applications or visa services was statistically significant ($\chi^2 = 11.171$, df = 1, $p < 0.05$).

Another commercial offering is e-tickets for air, buses, and trains. Only 20.6% of the total respondents (N = 720) received e-tickets for air, bus, and train transportation, while the remaining respondents (79.4%) did not use this service. 69.6% of people who used this service stated that union digital services had an effect on women's employment, while only 30.4% disagreed. The effect of union digital services on women's employment was compared using a chi-square test with e-tickets for air, bus, and train services. The expected cell frequencies were not less than 5. The effect of union digital services on women's employment and e-tickets for air, bus, and train travel was statistically significant ($\chi^2 = 26.006$, df = 1, $p < 0.05$).

Insurance services are another commercial service. Only 13.2% of the total respondents (N = 720) used the insurance services, while the majority of respondents (86.8%) did not. Among those who received this service, 66.3% believed that union digital services had an effect on women's employment, while only 33.7% of those who used it disagreed. A chi-square test was used to compare the impact of union digital services on women's employment with insurance services. The predicted cell frequencies did not fall below 5. The effect of union digital services on women's employment and insurance services had a statistically significant association ($\chi^2 = 23.349$, df = 1, $p < 0.05$).

Another type of commercial service is science and technology. Only 11.5% of the total respondents (N = 720) used the science and technology service, whereas the remaining respondents (88.5%) did not. 94% of respondents who received this service stated that union digital services had an effect on women's employment, while only 6% disagreed. To compare the effect of union digital services on women's employment with science and technology services, a chi-square test was performed. The expected cell frequencies were not less than 5. The effect of union digital services on women's employment and science and technology services was statistically significant ($\chi^2 = 7.502$, df = 1, $p < 0.05$).

Industry and commerce are other commercial services. Only 10.6% of the total respondents (N = 720) used the industry and commerce service, while the majority of respondents (89.4%) did not. Among those who received this service, 92.1% believed that union digital services had an impact on women's employment, while only 7.9% of those who used this service disagreed. A chi-square test was used to compare the effect of union digital services on women's employment with industry and commerce services. The predicted cell frequencies did not fall below 5. The effect of union digital services on women's employment and industry and commerce services was statistically significant ($\chi^2 = 4.590$, df = 1, $p < 0.05$).

Table 41: The commercial services provided by UDCs in the haor region and the effect of union digital services on women's employment.

| Commercial services offered by UDC in Haor area | | Whether or not the effect of Union Digital Services on women's employment | | |
|---|---|---|---|---|
| | | Yes Row N% | No Row N% | P-Value |
| Type/Data entry | Yes | 80.8 | 19.2 | 0.150 |
| | No | 84.9 | 15.1 | |
| Printing and Photocopying | Yes | 81.5 | 18.5 | 0.024 |
| | No | 88.5 | 11.5 | |
| E-mail and Internet browsing | Yes | 78.4 | 21.6 | 0.023 |
| | No | 85.4 | 14.6 | |
| CV and Job application | Yes | 80.4 | 19.6 | 0.133 |
| | No | 84.9 | 15.1 | |
| Computer/ICT/English Training | Yes | 97.6 | 2.4 | 0.012 |
| | No | 82.6 | 17.4 | |

| | | | | |
|---|---|---|---|---|
| Phone/Video Conferencing | Yes | 97.7 | 2.3 | <0.001 |
| | No | 81.5 | 18.5 | |
| Mobile Banking / Bank | Yes | 96.4 | 3.6 | <0.001 |
| | No | 78.7 | 21.3 | |
| Scanning & Laminating | Yes | 87.3 | 12.7 | 0.010 |
| | No | 80.1 | 19.9 | |
| Photography | Yes | 85.8 | 14.2 | 0.185 |
| | No | 82.0 | 18.0 | |
| Online Visa application / visa | Yes | 98.4 | 1.6 | 0.001 |
| | No | 82.0 | 18.0 | |
| E-tickets for air/bus/rail | Yes | 69.6 | 30.4 | <0.001 |
| | No | 87.1 | 12.9 | |
| Insurance services | Yes | 66.3 | 33.7 | <0.001 |
| | No | 86.1 | 13.9 | |
| Science and technology | Yes | 94.0 | 6.0 | 0.006 |
| | No | 82.1 | 17.9 | |
| Industry and commerce | Yes | 92.1 | 7.9 | 0.032 |
| | No | 82.5 | 17.5 | |

Source: Field Survey, April 2023 to June 2024

### 8.2 Effect of union digital services on women's employment in the haor region: An analysis of binary logistic regression

A binary logistic regression analysis was conducted to examine the impact of union digital services on women's employment in the Haor region. A total of nineteen (19) predictors were identified, categorised into three distinct groups of UDC services: government, information, and commercial services. Model 4 included six independent variables: passport or TIN tax certificate, livelihood information, land, VGD/VGF card, trade licence, and various government allowances. Model 5 included two independent variables: agriculture information, and environment and disaster management services. Model 6 included eleven independent variables: printing and photocopying, e-mail and internet browsing, computer/ICT/English language proficiency training, phone/video conferencing, mobile banking, scanning and laminating, online visa application, e-tickets for air, bus, and train, and insurance service. The subsequent tables display the outcomes of the binary logistic regression analysis, which determines the risk factors linked to the influence of union digital services on women's employment in haor regions. Prior to making a decision based on the binary logistic regression, this study conducted an analysis of the model's appropriateness. This included the omnibus test of model adequacy, the Hosmer-Lemeshow goodness of fit

test, the percentage accuracy of classification, and the Nagelkerke R-square. The omnibus test demonstrates significance, suggesting that the collection of covariates explains a greater portion of the variation in the dependent variable. The Hosmer-Lemeshow goodness of fit test demonstrates insignificance at the 5% level.

**Model 4: Government services provided by UDC and their effect on women's employment**

Model 4 includes six predictors, and the analysis identified two response types: 'yes' and 'no'. 'Yes' indicates the individuals who have received this service, whereas 'No' denotes those who have not received it. No category responses are regarded as references in this context. Table 42 shows that three out of the six predictors are statistically significant. The predictor of passport and TIN (tax) certificate significantly impacts women in the haor area, particularly regarding their employment benefits, as indicated by a p-value of 0.025, which is less than the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor. The odds ratio of 0.328 signifies that the probability of success in women's employment status is 0.328 times lower for individuals who received the intervention compared to those who did not receive it. The predictor of livelihood information significantly impacts women in the haor area, especially regarding their employment benefits, as indicated by a p-value of <0.001 (<0.05). The odds ratio of 0.226 signifies that the probability of success regarding women's employment status is 0.226 times lower for individuals who received the intervention (yes) in comparison to those who did not receive it (no). Additionally, another predictor is the various government allowances, which influence women's employment, as the p-value is <0.001 (<0.05). The odds ratio of 3.555 indicates that individuals who received government allowances have a likelihood of success in women's employment status that is 3.555 times greater than those who did not receive such allowances.

Table 42: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | P-Value | OR Exp(B) | 95% C.I. (lower-upper) |
|---|---|---|---|---|
| Passport/ TIN (tax) | Yes | 0.025 | 0.328 | (0.124-0.868) |

| | | | | |
|---|---|---|---|---|
| certificate | No | - | Ref. | - |
| Livelihood information | Yes | <0.001 | 0.226 | (0.108-0.473) |
| | No | - | Ref. | - |
| Land | Yes | 0.571 | 1.209 | (0.627-2.331) |
| | No | - | Ref. | - |
| VGD/VGF card database | Yes | 0.138 | 1.448 | (0.888-2.360) |
| | No | - | Ref. | - |
| Trade license | Yes | 0.832 | 1.063 | (0.607-1.861) |
| | No | - | Ref. | - |
| Various government allowances | Yes | <0.001 | 3.555 | (2.133-5.926) |
| | No | - | Ref. | - |

Source: Field Survey, April 2023 to June 2024

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2 = 66.149$, df = 6, $p < 0.001$), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2 = 20.432$, df = 07, P = 0.005) poorly fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 14.8% of the criterion variable's change. The estimated percentage of classification accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| **Model Summary** | |
|---|---|
| Omnibus test of model adequacy | Chi-square=66.149, DF=6, P-value<0.001 |
| Hosmer-Lemeshow goodness of fit | Chi-square= 20.432, DF= 07, P-value=.005 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 579.430 |
| Cox & Snell R Square | 0.088 |
| Nagelkerke R-square | 0.148 |

**Model 5: Information services provided by UDC and their effect on women's employment**

Model 5 incorporates two predictors, with the study identifying two distinct response types: 'yes' and 'no'. 'Yes' indicates the individuals who received this service, whereas 'No' denotes those who did not receive it. 'No' category responses are regarded as references in this context. Table 43 demonstrates that one predictor is statistically significant in the context of two predictors. The predictor associated with agricultural information has a significant impact on women in the haor area, particularly concerning their employment benefits, as evidenced by a p-value of 0.016, which is below the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor. The odds ratio of 0.489 signifies that the probability of success regarding women's employment status is 0.489 times lower for individuals who received the intervention in comparison to those who did not receive it.

Table 43: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | P-Value | OR Exp(B) | 95% CI (lower-upper) |
|---|---|---|---|---|
| Agricultural Information | Yes | 0.016 | 0.489 | (0.273-0.876) |
| | No | - | Ref. | - |
| Environment and Disaster management | Yes | 0.524 | 0.766 | (0.338-1.739) |
| | No | - | Ref. | - |

Source: Field Survey, April 2023 to June 2024

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2 = 11.469$, df = 2, p = 0.003), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2 = 0.672$, df = 02, P = 0.714) adequately fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 2.7% of the criterion variable's change. The estimated percentage of

classification accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| Model Summary | |
|---|---|
| Omnibus test of model adequacy | Chi-square=11.469, DF=2, P-value = 0.003 |
| Hosmer-Lemeshow goodness of fit | Chi-square= 0.672, DF= 02, P-value=.714 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 634.110 |
| Cox & Snell R Square | 0.016 |
| Nagelkerke R-square | 0.027 |

**Model 6: Commercial services provided by UDC and their effect on women's employment**

Model 6 includes a total of nine predictors, with the study identifying two distinct response types: 'yes' and 'no'. 'Yes' indicates the individuals who received this service, whereas 'No' denotes those who did not receive it. In this context, responses categorised as 'no' are treated as references. Table 44 shows that three out of nine predictors are statistically significant. The predictor associated with printing and photocopying has an effect on women in the Haor area, particularly concerning their employment benefits, as evidenced by a p-value of 0.011, which is below the threshold of 0.05. Exp (B) represents the odds ratio (OR) associated with the predictor. The odds ratio of 2.103 signifies that the probability of women's employment status is 2.103 times greater for individuals who received the intervention (yes) in comparison to those who did not receive it (no). Another predictor identified is mobile banking, which influences women's employment, indicated by a p-value of 0.001 (<0.05). The odds ratio of 0.238 indicates that mobile banking or bank accounts for individuals who received them (yes) are 0.238 times lower compared to those who did not receive them (no). This finding suggests a correlation with the likelihood of women's employment status in the haor area. Another predictor identified is the use of e-tickets for air, train, and bus travel, which impacts women's employment in haor areas, as indicated by a p-value of less than 0.001 (<0.05). The odds ratio of 5.235 indicates that individuals who received e-tickets for air, train, and bus services have a likelihood that is 5.235 times greater of experiencing an effect on women's employment in the Haor region compared to those who did not receive e-tickets.

Table 44: Odds Ratio and Confidence Interval from Binary Logistic Regression Result

| Predictors | Binary Logistic Regression | p-value | OR (Exp(B)) | 95% CI (lower, upper) |
|---|---|---|---|---|
| Printing and Photocopying | Yes | .011 | 2.103 | (1.190-3.717) |
| | No | - | Ref. | - |
| E-mail and Internet browsing | Yes | .214 | .594 | (0.262-1.349) |
| | No | - | Ref. | - |
| Computer/ICT/English Training | Yes | .217 | .267 | (0.033-2.179) |
| | No | - | Ref. | - |
| Phone/Video Conferencing | Yes | .576 | .590 | (0.093-3.748) |
| | No | - | Ref. | - |
| Mobile Banking / Bank | Yes | .001 | .238 | (0.101-0.560) |
| | No | - | Ref. | - |
| Scanning & Laminating | Yes | .407 | .816 | (0.504-1.319) |
| | No | - | Ref. | - |
| Online Visa application / visa | Yes | .495 | .398 | (0.028-5.585) |
| | No | - | Ref. | - |
| E-tickets for air/bus/rail | Yes | .000 | 5.235 | (2.240-12.237) |
| | No | | Ref. | |
| Insurance services | Yes | .584 | 1.277 | (0.532-3.064) |
| | No | | Ref. | |
| Science and technology | Yes | .323 | .581 | (0.198-1.706) |
| | No | | Ref. | |
| Industry and commerce | Yes | .093 | .388 | (0.129-1.170) |
| | No | | Ref. | |

Source: Field Survey, April 2023 to June 2024

The omnibus test of model adequacy is used to test the model fit. The omnibus test is significant ($\chi^2 = 97.693$, df = 11, $p < 0.001$), indicating that the set of covariates accounts for more variation in the dependent variable. Hence, the model is showing a good fit. Hosmer-Lemeshow goodness is also a test of model fit. The Hosmer-Lemeshow statistic indicates a poor fit if the significance value is less than 0.05. Here, the model ($\chi^2 = 26.103$, df = 07, $P < 0.001$) poorly fits the data. The Negelkerke R-square, commonly utilised, modifies the Cox & Snell R-square to encompass the entire range from 0 to 1. The model's predictor variables can explain 21.4% of the criterion variable's change. The estimated percentage of classification

accuracy is 83.50%, meaning that the model correctly classified 83.50% of the fitted values of the dependent variable.

| Model Summary | |
|---|---|
| Omnibus test of model adequacy | Chi-square=97.693, DF=11, P-value <0.001 |
| Hosmer and Lemeshow goodness of fit | Chi-square= 26.103, DF= 07, P-value <0.001 |
| Percentage accuracy of classification | 83.5% |
| -2 log likelihood | 547.887 |
| Cox & Snell R Square | 0.127 |
| Nagelkerke R-square | 0.214 |

### 8.3 Union digital services and its effect on women's employment in the haor region: qualitative findings

The Union Digital Centre, located in the Haor region, has had a substantial effect on women's employment through the provision of digital services. The services provided include MPO applications and facilities for online job applications at public and private organisations. The initiative aims to enhance awareness and create improved employment opportunities for women, motivating them to pursue applications for educational institutions such as schools, colleges, or universities. Employment-related services encompass job applications, overseas visa applications, government form downloads, English language proficiency training, and computer training. The UDC promotes the involvement of women as entrepreneurs within its framework. The objective is to deliver digital services at the grassroots, provide education to unemployed individuals regarding job opportunities, and facilitate employment through diverse training programmes. The following sections present a discussion of the major findings.

#### 8.3.1 Women employment

The Upazila Women's Affairs Office and Social Services are implementing multiple strategies to improve women's employment opportunities. UDC offers training programmes, professional development opportunities, and work stability assessments that enable women to initiate online businesses and pursue freelance opportunities. Life-skills training equips young women in the community with essential skills and information, facilitating access to a diverse range of employment opportunities and enhancing their employability and qualifications. UDC facilitates the enhancement of women's employment by offering

opportunities for knowledge acquisition, technology access, and mobile phone provision. A participant communicated

> “The Women's Affairs Office and Social Services are focused on improving employment rates and equipping women for a variety of professions through career options, training programmes, job creation initiatives, job security assessments, e-commerce enterprises, ICT training, and life skills training”.

He also added that

> “The Upazila social welfare office offers various training programmes for women in haor regions at the Union Parishad level. The youth development department has organised numerous training programmes aimed at skill enhancement for women in haor regions. The Upazila veterinary department offers a livestock training programme specifically designed for women. In this context, UDC facilitates the online application process for interested young individuals, women, and girls. So, it can be said that UDC plays a significant role in creating employment opportunities for women in haor regions” (IDI XVI).

Insufficient surveillance protocols hinder women's ability to exert significant influence in the professional domain. Individuals have the opportunity to engage in roles within union offices, where they can develop computer skills; however, they ultimately secure employment in the agricultural sector. Union councils offer training in sewing machine operation, whereas the UDC is responsible for facilitating the registration process. The provision of microcredit, allowances, and government incentives significantly contributes to the empowerment of women, facilitating their attainment of self-reliance. One participant communicated

> "The UDC assists women in acquiring sewing machines from the Union Parishad, promotes their development of digital technology skills, and offers them opportunities for business ownership," stated the UP Chairman (IDI XVII).

The report identifies inadequate support for women's employment at union digital centres in Bangladesh, emphasising the limited range of services provided. A significant percentage of highly educated women residing in rural areas face limited employment opportunities. To address this issue, it is recommended to initiate a project that focuses on improving job

opportunities for women or offering support to female entrepreneurs. Training programmes are available; however, there is no assurance of appropriate employment opportunities. Women entrepreneurs contribute substantially to the growth of internet commerce. Union digital centres lack adequate support structures to assist women in securing employment. The current status of women's employment indicates progress; however, uncertainty persists. A participant communicated

> "The implementation of digital services has significantly influenced women's career opportunities in the Haor region. UDC offers women the opportunity to pursue entrepreneurial roles. In the event that the goal is deemed unachievable, the UDC provides a range of livelihood training programmes, which encompass computer and ICT training aimed at skill enhancement. Individuals possessing this skill set are capable of effectively managing employment opportunities in both public and private sectors" (IDI XVIII).

The UDC is facilitating women's employment through a range of programmes and activities, which include the provision of sewing machines for lending and the delivery of vocational training. As of now, female entrepreneurs constitute approximately 30% of the workforce. Individuals who complete computer training at the union's digital centre can earn approximately 15,000 BDT per month as entrepreneurs. The absence of women's participation in entrepreneurship leads to a limited effect of union digital services on women's employment opportunities. The organisation's initiatives to enhance women's employment opportunities are currently constrained. One of the individuals involved communicated

> "The union digital centre facilitates women's employment through various life skills training programmes. These programmes encompass computer training, English language education, access to sewing machines, and job training. The Entrepreneur report indicates that women entrepreneurs represent 30% of the UDC workforce" (IDI XIX).

Career opportunities for women are expanding; however, certain limitations exist. The UDCs offer comprehensive resources and training in information and communication technology aimed at supporting individuals in exploring self-employment opportunities and

strengthening their job application skills. By suspending specific job applications, women can facilitate work placement services. A participant indicated

> "Despite the growing trend of women employed in union digital centres, their job opportunities continue to be constrained. UDCs, despite certain limitations, offer ICT training and relevant work-related information to support women in their efforts to secure entrepreneurial positions and complete job applications" (IDI XX).

UDC has contributed significantly to job creation through both direct and indirect means. UDC possesses the capability to directly engage a female entrepreneur. UDC provides skill development training designed to equip individuals with the necessary tools to effectively manage their livelihoods. A participant articulated his viewpoint:

> "UDC has positioned itself as a multifaceted facility, addressing the requirements of businesses owned by both males and females. The UDC directly employed women in this instance. While UDC does not offer direct employment opportunities, it has the potential to provide women with more time compared to men. Outsourcing and freelancing can facilitate the expansion of UDC services. UDC provides women with the opportunity to gain knowledge in various facets of courtyard gardening, such as strawberry cultivation, and supplies data on current market prices for products. Additionally, it offered benefits to women engaged in the cottage industry by allowing them to evaluate the demand for their products and pinpoint particular market segments. The UDC promotes and facilitates opportunities for overseas employment" (IDI XXXVIII).

### 8.4 Summary of the chapter

The study outlines users' perceptions of union digital services and their effects on women's employment in haor regions. It specifically addresses aspects such as overseas employment, passport and TIN tax certificates, livelihood information, VGD and VGF card listings, agricultural data, legal and human rights, phone and video conferencing, mobile banking, online visa applications, e-tickets for air, train, and bus travel, insurance services, science and technology, and industry and commerce. The research identified several government allowances, printing and photocopying operations, and the use of e-tickets for air, bus, and rail travel as key predictors of covariates in this study. The study indicates that ICT training,

life skills training, computer training, English language education, outsourcing, freelancing, and e-commerce enhance work options for women. The findings indicate that women represent 30% of the workforce at the UDC in haor regions.

# CHAPTER NINE

# ISSUES AND CHALLENGES FACED BY WOMEN AND UDC

## 9.0 Introduction

This chapter presents empirical data concerning the dissemination modes of union digital services (UDSs), user perceptions of UDS dissemination, the effects of UDSs on women in haor regions, the types of UDSs pursued by women in these areas, gender disparities in accessing UDC services, and critical issues and socio-economic barriers encountered by women and UDCs in haor regions. The issues are presented in a sequential manner. The chapter presents a comprehensive explanation of the discussed topics, supported by both quantitative and qualitative statistics.

## 9.1 Mode of Dissemination of Union Digital Services

### 9.1.1 Quantitative Findings

Table 45 illustrates the various methods of distributing digital services in UDCs located in the Haor area. Furthermore, the table below illustrates four supplementary UDC service delivery methods: paper-based, email, verbal, and mobile phone. Based on the data in Table 45, it can be shown that a significant proportion of female customers (73.7%) gained services using traditional paper-based methods, while just a small fraction (2.4%) received services via email from the UDC. In addition, 20.2% of the respondents reported acquiring services from the UDC by verbal means, while 3.6% said that they received services from the UDC using mobile phones. In a similar vein, 66.2% of the respondents stated that male respondents preferred the mode of service dissemination via paper-based means in the research. 20.3% of respondents chose verbal communication as their second-most preferred method, with email (5.2%) and cell phone (8.2%) coming in third and fourth, respectively. Table 45 indicates that the paper-based method is the prevailing strategy for distributing digital services from the UDC, considering both male and female service seekers in haor regions. The crosstab analysis shows that female UDC users were more familiar with paper-based (73.7% female, 66.2% male) and verbal approaches (20.2% female, 20.3% male) compared to male users. On the other hand, male UDC users were slightly more familiar with email (2.4% female, 5.2% male) and mobile phone (3.6% female, 8.2% male) modes. The connection between the mode

of dissemination of union digital services and the gender identification of respondents was examined using a chi-square test. So, we can say that there was a meaningful link, at a 5% significance level, between how union digital services were shared and the gender of the respondents ($\chi^2 = 11.965$, df = 3, p = 0.008).

Table 45: Dissemination mode of Union Digital Services preferred by gender

| Gender | Dissemination mode of Union Digital Services | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|
| | Paper-based | Email | Verbal | Mobile Phone | | |
| Male | 66.20* | 5.20 | 20.30 | 8.20 | 100 | 0.008 |
| Female | 73.70 | 2.40 | 20.20 | 3.60 | 100 | |
| Total | 70.56 | 3.61 | 20.28 | 5.55 | 100 | |
| * Row Percentage (% within Gender) | | | | | | |

Source: Field Survey, June 2023

### 9.1.2 Qualitative Result

The government seeks to implement governance that is both efficient and inclusive throughout the nation. Despite the commitment to establishing a digital Bangladesh by 2021, there remains a notable level of public dissatisfaction. This study examines the dissemination strategy of union digital services and its impact on women in haor regions. The study aims to elucidate the strategies employed to distribute UDC-provided services across the Haor region. The study aims to detail the dissemination strategies employed for UDC-provided services within the haor area. Home service delivery involves the provision of services directly at the customer's residence, wherein the service provider is responsible for ensuring the service is rendered at the customer's location. The premises of the Union Parishad in their respective localities generally accommodate UDCs. Union digital centres, designated by the UP, are utilised by both male and female entrepreneurs to provide services to the residents of Haor. The centres deliver union digital services directly to rural residents. Various strategies exist for delivering amenities to individuals in need. In certain exceptional circumstances, UDC entrepreneurs considered the requirements presented by their consumers. A participant indicated that

> "UDC entrepreneurs use their laptops to establish connections with individuals requiring services, delivering critical support during emergency situations for service

seekers within our union. As a result, individuals residing in the Haor region are able to obtain cash remittances from their respective local UDCs. Various government allowances can also be received at their residence" (IDI XXXVI).

The study identified five strategies for disseminating union digital services in haor areas. The strategies employed include paper-based communication, verbal interactions, email correspondence, telephone communication, and home service delivery. Service delivery strategies that use paper indicate that individuals are actively pursuing the required services from UDCs and obtaining them in document form. Participants require access to various government and informational services, including university admissions circulars, public examination results, and government notices or announcements. In these instances, UDC entrepreneurs convey information to service seekers using a verbal method. The union residence is requesting that UDC entrepreneurs submit citizen certificates through email communication. UDC users may, at times, request consultations via telephone. During emergencies or for esteemed clients, UDC entrepreneurs customise their services to align with customer specifications, a procedure referred to as home service delivery.

### 9.2 User's perceptions on the dissemination of union digital services provided by UDC with regard to gender preference

Table 46 displays the evaluation of internet speed status for UDCs categorised by gender preference. The study indicates that there are multiple levels of satisfaction regarding internet speed. The data indicates moderate satisfaction levels at 31.8% for males and 42.2% for females, great satisfaction at 31.5% for males and 28.7% for females, and full satisfaction at 0.7% for males and 0.5% for females. A notable proportion of individuals report low satisfaction levels, with 14.1% of males and 17.8% of females indicating they are not very satisfied. Additionally, a smaller segment expresses strong dissatisfaction, comprising 22.0% of males and 10.8% of females. The Pearson chi-square test was applied in instances where the expected cell count was 25% or lower and less than 5. The relationship between UDC internet speed and the gender identification of respondents was examined through a chi-square test. In conclusion, a statistically significant correlation exists at a 5% significance level between the internet speed of UDC and the gender identification of the respondents ($\chi^2 = 21.049$, $df = 4$, $p < 0.001$).

Table 46: User perception about internet speed of UDCs with gender preference

| Gender | Internet speed of UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 22.0* | 14.1 | 31.8 | 31.5 | 0.7 | 100 | <0.001 |
| Female | 10.8 | 17.8 | 42.2 | 28.7 | 0.5 | 100 | |
| Total | 15.56 | 16.25 | 37.78 | 29.86 | 0.55 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 47 presents an analysis of users' perspectives regarding the availability of essential equipment for UDCs, organised by gender preference. The study indicates that respondents exhibited differing degrees of satisfaction. The satisfaction levels are categorised as follows: moderate satisfaction is reported by 39.7% of males and 44.8% of females; great satisfaction is indicated by 30.2% of males and 26.5% of females; and full satisfaction is noted by 10.2% of males and 3.6% of females. Conversely, some respondents indicated a level of dissatisfaction, with 17.7% of males and 22.7% of females reporting not very satisfied and 2.3% of males and 2.4% of females expressing strong dissatisfaction. A chi-square test was conducted to examine the relationship between the availability of essential equipment for UDCs and the gender identification of respondents. There exists a statistically significant association, at the 5% significance level, between the availability of essential equipment for UDCs and the gender of the respondents ($\chi^2 = 15.836$, df = 4, p = 0.003).

Table 47: User perception of equipment availability in UDCs based on gender preference

| Gender | Available of necessary equipment of UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 2.3* | 17.7 | 39.7 | 30.2 | 10.2 | 100 | 0.003 |
| Female | 2.4 | 22.7 | 44.8 | 26.5 | 3.6 | 100 | |
| Total | 2.36 | 20.56 | 42.64 | 28.05 | 6.39 | 100 | |
| *Row percentage(% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 48 illustrates the impact of gender preference on the satisfaction levels of service seekers regarding the availability of electricity at the UDCs. The analysis of row percentages indicates variability in the levels of satisfaction among respondents. Individuals with moderate satisfaction represented 23.0% of the male population and 26.5% of the female population. 26.6 per cent of males and 29.9 per cent of females indicated a high level of satisfaction. The proportion of fully satisfied individuals was relatively low, comprising 3.3% of males and 3.1% of females. A notable proportion of respondents indicated dissatisfaction, with 19.0% of males and 21.2% of females reporting low levels of satisfaction. A significant proportion of respondents reported strong dissatisfaction, with 28.2% of males and 19.3% of females expressing this sentiment. A chi-square test was conducted to examine the relationship between the availability of electricity at UDCs and the gender identification of respondents. In conclusion, the analysis indicates that there is no statistically significant association, at the 5% significance level, between the availability of electricity in union digital centres and the gender identification of the respondents ($\chi^2 = 8.064$, df = 4, p = 0.089).

Table 48: The users' perceptions of the availability of electricity in UDCs, categorised by gender preference.

| Gender | Availability of electricity of UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 28.2* | 19.0 | 23.0 | 26.6 | 3.3 | 100 | 0.089 |
| Female | 19.3 | 21.2 | 26.5 | 29.9 | 3.1 | 100 | |
| Total | 23.06 | 20.28 | 25 | 28.47 | 3.19 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 49 illustrates users' perspectives regarding the skills of entrepreneurs in UDCs, highlighting diverse opinions that vary according to gender preference. The analysis presents differing degrees of satisfaction represented as row percentages. The data indicates moderate satisfaction levels at 43.6% for males and 52.0% for females. Great satisfaction is reported at 24.6% for males and 28.9% for females. Full satisfaction is recorded at 12.5% for males and 5.8% for females. In contrast, the data indicated lower levels of satisfaction, with 19.0% of males and 12.8% of females reporting minimal satisfaction. Additionally, only 0.3% of males

and 0.5% of females indicated strong dissatisfaction. A chi-square test was conducted to examine the relationship between skilled entrepreneurs in union digital centres and gender identification among the respondents. The analysis shows a meaningful connection at the 5% significance level between skilled entrepreneurs from UDCs and the gender of the respondents, as shown by the chi-square statistic ($\chi^2 = 17.445$, df = 4, p = 0.002).

Table 49: Users' perception about skilled entrepreneurs of UDCs with gender preference

| Gender | Skilled entrepreneurs of UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 0.3* | 19.0 | 43.6 | 24.6 | 12.5 | 100 | 0.002 |
| Female | 0.5 | 12.8 | 52.0 | 28.9 | 5.8 | 100 | |
| Total | 0.42 | 15.42 | 48.47 | 27.08 | 8.61 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 50 presents customers' perceptions of the behaviour of entrepreneurs from UDCs, categorised by gender preference. The study indicates that there were different levels of satisfaction among the respondents. These levels ranged from moderately satisfied (22.3% of males and 27.2% of females) to great satisfaction (34.1% of males and 39.8% of females) and fully satisfied (26.2% of males and 17.6% of females). On the other hand, there were also respondents who were not very satisfied (15.4% of males and 13.0% of females) and those who were strongly dissatisfied (2.0% of males and 2.4% of females). A chi-square test was conducted to investigate the association between the behaviour of entrepreneurs in union digital centres and the gender identity of the respondents. Therefore, we can conclude that there was a statistically significant association, with a confidence level of 95%, between the behaviour of entrepreneurs in union digital centres and the gender identification of the respondents ($\chi^2 = 10.260$, df = 4, p = 0.036).

Table 50: User perception about behavior of entrepreneurs of UDCs with gender preference

| Gender | Behavior of entrepreneurs of UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 2.0* | 15.4 | 22.3 | 34.1 | 26.2 | 100 | 0.036 |
| Female | 2.4 | 13.0 | 27.2 | 39.8 | 17.6 | 100 | |
| Total | 2.22 | 14.03 | 25.14 | 37.36 | 21.25 | 100 | |
| *Row percentage (%within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 51 presents the comprehensive service delivery metrics of UDCs, categorised by gender preference. The analysis reveals varying degrees of satisfaction among respondents, represented as row percentages. The satisfaction levels were categorised as follows: moderately satisfied, with 53.8% of males and 62.7% of females; great satisfaction, with 21.3% of males and 22.4% of females; and fully satisfied, with 17.7% of males and 6.7% of females. Conversely, lower levels of satisfaction were reported, with 6.9% of males and 8.0% of females indicating they were not very satisfied. Additionally, only 0.3% of males and 0.2% of females expressed strong dissatisfaction. A chi-square test was performed to examine the relationship between the overall service delivery of UDCs and the gender identification of respondents. At a significance level of 5%, the results indicate a statistically significant association between the overall service delivery of UDCs and the gender identity of the respondents ($\chi^2 = 21.300$, df = 4, $p < 0.001$).

Table 51: User perception about overall service delivery of UDCs with gender preference

| Gender | Overall service delivery by UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Strongly dissatisfied | Not much satisfied | Moderately satisfied | To a great satisfied | Fully satisfied | | |
| Male | 0.3* | 6.9 | 53.8 | 21.3 | 17.7 | 100 | <0.001 |
| Female | 0.2 | 8.0 | 62.7 | 22.4 | 6.7 | 100 | |
| Total | 0.28 | 7.5 | 58.89 | 21.94 | 11.39 | 100 | |
| * Row percentage (%within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

### 9.3 The effect of union digital services on women in the haor areas – Users' perception

The subsequent tables present users' viewpoints regarding the effect of UDS on women within the designated areas. The objectives encompass the facilitation of government, information, and commercial services; the enhancement of access to information and services for women in the haor area; the expansion of access to health information and services; the promotion of computer literacy; the advancement of education and literacy; the increase of employment opportunities for young women; and the fostering of women's participation in household decision-making and local government institutions.

Table 52 illustrates customer perspectives regarding the impact of accessible government, information, and commercial services on gender preference. A total of 41.3% of male respondents and 44.3% of female respondents reported a moderate level of agreement with the statement. A smaller percentage of respondents reported a high level of agreement, with 23.9% of males and 31.3% of females indicating this statement. A minority of respondents, specifically 21.3% of males and 8.9% of females, reported a very high level of agreement. In contrast, the respondents who were categorised as less important expressed agreement with this statement at low levels of agreement, with 13.1% of males and 14.0% of females reporting such levels. Additionally, extremely low levels of agreement were noted, with 0.3% of males and 1.4% of females indicating this response. A chi-square test was conducted to assess the relationship between gender identity and access to government, information, and commercial services. The analysis indicates a statistically significant association at the 5% significance level between the respondents' gender identity and their access to government, information, and commercial services ($\chi^2 = 25.203$, df = 4, p = 0.001).

Table 52: Easy access to government, information and commercial services by gender preference

| Gender | Easy access to government, commercial and information services | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 0.3%* | 13.1 | 41.3 | 23.9 | 21.3 | 100 | <0.001 |
| Female | 1.4 | 14.0 | 44.3 | 31.3 | 8.9 | 100 | |
| Total | 0.97 | 13.61 | 43.06 | 28.19 | 14.17 | 100 | |

*Row percentage (% within Gender)

Source: Field Survey, April 2023 to June 2024

Table 53 displays user opinions regarding the enhancement of information access and service availability for women in the haor region, organised by gender preference. The investigation identified divergent viewpoints regarding this matter. A significant portion of respondents indicates moderate agreement with the statement, with 37.4% of male participants and 43.9% of female participants reflecting this level of consensus. A subsequent analysis reveals that a smaller proportion of respondents express high agreement, with 25.2% of males and 30.1% of females indicating this statement. A smaller percentage, specifically 21.6% of males and 10.6% of females, indicate a very high level of agreement. A minority of participants indicated their agreement with this statement at a low degree, with males at 15.1% and females at 14.9%. Additionally, a very low level of agreement was observed, with males at 0.7% and females at 0.5%. A chi-squared test was performed to examine the relationship between access to information and services for women in the Haor region and the gender identification of the respondents. The analysis indicates a significant association at the 5% significance level between improved access to information and services for women in the Haor region and the gender of the respondents ($\chi^2 = 17.300$, df = 4, p = 0.002).

Table 53: Improvement of access to information and services for women in haor area by gender preference

| Gender | Improved access to information and services for women in Haor area | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 0.7* | 15.1 | 37.4 | 25.2 | 21.6 | 100 | 0.002 |
| Female | 0.5 | 14.9 | 43.9 | 30.1 | 10.6 | 100 | |
| Total | 0.55 | 15 | 41.11 | 28.06 | 15.28 | 100 | |
| *Row percentage (%within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 54 presents customers' perspectives about increasing health information and telemedicine services, categorised by gender preference. Divergent viewpoints were

identified about this matter in the research. The majority of respondents, both male (35.4%) and female (38.8%), moderately agree with this statement. A smaller percentage of respondents, both male (29.8%) and female (35.7%), highly agree with the statement. The smallest percentage of respondents, male (22.0%) and female (12.5%), had very high agreement with the statement. In contrast, the respondents who are considered less important agree with this statement at a lower level. Specifically, the agreement levels are categorised as low, with 11.5% of males and 12.5% of females, and very low, with 1.3% of males and 0.5% of females. A chi-square test was used to investigate the association between the level of health information, the use of telemedicine services, and the gender identification of the respondents. Therefore, we can say that there was a statistically significant relationship ($\chi^2$ = 13.424, df = 4, p = 0.009) between the respondents' gender and the increase in health information and telemedicine services. The significance level was set at 5%.

Table 54: Increase health information and telemedicine services in haor area by gender preference

| Gender | Increase health information and telemedicine services | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 1.3* | 11.5 | 35.4 | 29.8 | 22.0 | 100 | 0.009 |
| Female | 0.5 | 12.5 | 38.8 | 35.7 | 12.5 | 100 | |
| Total | 0.83 | 12.08 | 37.36 | 33.19 | 16.53 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 55 illustrates the users' perspectives regarding the spread of computer literacy based on gender preference. A substantial percentage of respondents indicated a high agreement with this statement, specifically 36.4% of males and 40.0% of females. Furthermore, a significant proportion of respondents indicated moderate agreement, with 23.9% of males and 28.2% of females falling into this category. In contrast, a lesser percentage demonstrated very high agreement, comprising 10.5% of males and 7.7% of females. In contrast, 14.1% of male respondents and 14.9% of female respondents expressed agreement with this statement at low and very low levels, with 15.1% of males and 9.2% of females indicating such agreement. A chi-square test was performed to examine the association between the spread of computer

literacy and the gender identification of the participants. In conclusion, the analysis indicates that there is no statistically significant association, at a significance level of 5%, between the spread of computer literacy and the gender identification of respondents ($\chi^2 = 8.708$, df = 4, p = 0.069).

Table 55: Spread of computer literacy provided by UDCs with gender preference

| Gender | Spread of computer literacy provided by UDCs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 15.1* | 14.1 | 23.9 | 36.4 | 10.5 | 100 | 0.069 |
| Female | 9.2 | 14.9 | 28.2 | 40.0 | 7.7 | 100 | |
| Total | 11.67 | 14.58 | 26.39 | 38.47 | 8.89 | 100 | |
| * Row percentage (% within Gender) | | | | | | | |

Source: Field Survey,April 2023 to June 2024

Table 56 outlines users' perspectives regarding the promotion of education and literacy, emphasising gender preference. The investigation into this matter revealed divergent viewpoints. A significant portion of respondents indicated moderate agreement, with 33.1% of males and 41.7% of females. This response was followed by high agreement, reported by 28.9% of males and 28.0% of females, and very high agreement, noted by 20.3% of males and 10.1% of females, concerning the promotion of education and literacy. The respondents of lesser significance indicated their agreement with this statement at low levels, with males at 15.7% and females at 19.0%. Additionally, very low levels were reported, with males at 2.0% and females at 1.2%. A chi-square test was performed to examine the relationship between the promotion of education and literacy and the gender identification of the respondents. In summary, there is a strong link between the promotion of education and literacy and the gender of the respondents, shown by a 5% significance level ($\chi^2 = 17.879$, df = 4, p = 0.001).

Table 56: Promotion of education and literacy with gender preference

| Gender | Promotion of education and literacy | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Male | 2.0* | 15.7 | 33.1 | 28.9 | 20.3 | 100 | 0.001 |
| Female | 1.2 | 19.0 | 41.7 | 28.0 | 10.1 | 100 | |
| Total | 1.53 | 17.64 | 38.06 | 28.33 | 14.44 | 100 | |
| * Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 57 presents a trend analysis of consumer assessments regarding female employment, showing a correlation with gender preference. The investigation into this matter revealed divergent viewpoints. The data reveals that a considerable percentage of respondents demonstrated high agreement with this statement, with 36.4% of males and 40.0% of females categorised accordingly. Furthermore, a significant proportion of respondents expressed moderate agreement, with 23.9% of male participants and 28.2% of female participants categorised accordingly. A reduced proportion of respondents indicated a very high level of agreement, with 10.5% of males and 7.7% of females grouped accordingly. A specific proportion of the respondents hold a differing opinion regarding this statement, especially at the low levels (males: 14.1%, females: 14.9%) and very low levels (males: 15.1%, females: 9.2%). A chi-square test was performed to examine the relationship between the increase in female employment in the Haor region and the gender identification of the respondents. Consequently, it can be concluded that there was no statistically significant association, at a significance level of 5%, between the increase in female employment in the Haor region and the gender identification of respondents ($\chi^2 = 8.708$, df = 4, p = 0.069).

Table 57: Improvement of women's employment with gender preference

| Gender | Improvement of women's employment | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 15.1* | 14.1 | 23.9 | 36.4 | 10.5 | 100 | 0.069 |
| Female | 9.2 | 14.9 | 28.2 | 40.0 | 7.7 | 100 | |
| Total | 11.67 | 14.58 | 26.39 | 38.47 | 8.89 | 100 | |
| *Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

Table 58 presents an analysis of users' perspectives regarding the growing involvement of women in the decision-making processes within household and local government institutions,

with a focus on gender preferences. The data reveals that a considerable percentage of respondents showed varying levels of agreement with this statement. In the sample, 44.9% of respondents were male, while 52.0% were female, both indicating a moderate level of agreement. Furthermore, 26.2% of male respondents and 24.6% of female respondents indicated a high level of agreement. Additionally, 18.4% of male respondents and 10.1% of female respondents expressed high agreement with the statement. A small percentage of respondents indicated low agreement with this statement, with male respondents representing 10.5% of the sample and female respondents representing 13.0%. Additionally, an extremely minor proportion expressed very low agreement, with male respondents accounting for 0.0% and female respondents for 0.2% of the sample. A chi-square test was performed to examine the relationship between the extent of women's participation in household and local government decision-making processes and the gender identification of the respondents. Consequently, it can be concluded that a statistically significant association exists, at a 5% significance level, between the increased involvement of women in household and local government decision-making processes and the gender identification of the respondents ($\chi^2$ = 12.452, df = 4, p = 0.014).

Table 58: Increasing women's participation in the decision-making process of HH and LGIs with gender preference

| Gender | Increasing women's participation in the decision-making process of HH and LGIs | | | | | Total | P-Value (Chi-square) |
|---|---|---|---|---|---|---|---|
| | Very Low Agree | Low Agree | Moderate Agree | High Agree | Very High Agree | | |
| Male | 0.0* | 10.5 | 44.9 | 26.2 | 18.4 | 100 | 0.014 |
| Female | 0.2 | 13.0 | 52.0 | 24.6 | 10.1 | 100 | |
| Total | 0.14 | 11.94 | 49.03 | 25.28 | 13.61 | 100 | |
| * Row percentage (% within Gender) | | | | | | | |

Source: Field Survey, April 2023 to June 2024

### 9.4 The nature of union digital services sought by women in haor regions

Table 59 illustrates the different governmental services offered by UDCs in the Haor region. Both male and female individuals used the UDC services in the Haor region. The

questionnaire survey uncovered around nine services provided by UDC in the Haor region, with replies indicating both yes and no responses. The crosstab analysis reveals that among the respondents, the utilisation rates for different services were as follows: birth, death, and citizen certificate (males: 41.7% and females: 58.3%); overseas employment (males: 53.2% and females: 46.8%); passport and TIN certificate (males: 65.7% and females: 34.3%); livelihood information (males: 51.1% and females: 48.9%); land (males: 68.6% and females: 31.4%); trade license (males: 59.9% and females: 40.1%); land recording (males: 59.3% and females: 40.7%); and various government allowances (males: 40.7% and females: 59.3%).

Table 59: The nature of union digital services in the category of government services sought by women in the Haor area

| Union Digital Services (Government services) | | Gender | |
|---|---|---|---|
| | | Male | Female |
| | | Row N% | Row N% |
| Birth /death/ citizen certificate | Yes | 41.7 | 58.3 |
| | No | 50.0 | 50.0 |
| Overseas employment | Yes | 53.2 | 46.8 |
| | No | 41.3 | 58.7 |
| Passport/ TIN (tax) certificate | Yes | 65.7 | 34.3 |
| | No | 38.5 | 61.5 |
| Livelihood information | Yes | 51.1 | 48.9 |
| | No | 39.4 | 60.6 |
| Land | Yes | 68.6 | 31.4 |
| | No | 34.9 | 65.1 |
| VGD/VGF card database | Yes | 35.4 | 64.6 |
| | No | 50.0 | 50.0 |
| Trade license | Yes | 59.9 | 40.1 |
| | No | 37.3 | 62.7 |
| Land recording | Yes | 59.3 | 40.7 |
| | No | 37.0 | 63.0 |
| Various government allowances | Yes | 40.7 | 59.3 |
| | No | 43.4 | 56.6 |

Source: Field Survey, April 2023 to June 2024.

Table 60 displays the various information services offered by UDCs in the Haor region. Both male and female individuals used the UDC services in the Haor region. The questionnaire survey indicates that UDC offers around seven services in the Haor region. The replies

received include both affirmative ('yes') and negative ('no') answers. The cross-tab analysis reveals the following percentages of respondents who utilised various services: education (including admission test, form fill-up, and exam results) - males: 47.8% and females: 52.2%; government forms download – males: 49% and females: 51%; health – males: 39.9% and females: 60.1%; agriculture information – males: 59.1% and females: 40.9%; law and human rights – males: 54.5% and females: 45.5%; tourism – males: 50% and females: 50%; and environment and disaster management – males: 55.1% and females: 44.9%.

Table 60: The nature of union digital services in the category of information services sought by women in the Haor area

| Livelihood or Information services | | Gender | |
|---|---|---|---|
| | | Male | Female |
| | | Row N% | Row N% |
| Education/ admission test & form / exam result | Yes | 47.8 | 52.2 |
| | No | 36.8 | 63.2 |
| Govt. forms download | Yes | 49.0 | 51.0 |
| | No | 37.3 | 62.7 |
| Health | Yes | 39.9 | 60.1 |
| | No | 44.2 | 55.8 |
| Agricultural Information | Yes | 59.1 | 40.9 |
| | No | 35.5 | 64.5 |
| Law and human rights | Yes | 54.5 | 45.5 |
| | No | 40.4 | 59.6 |
| Tourism | Yes | 50.0 | 50.0 |
| | No | 42.3 | 57.7 |
| Environment and Disaster management | Yes | 55.1 | 44.9 |
| | No | 40.4 | 59.6 |

Source: Field Survey, April 2023 to June 2024.

Table 61 presents the various commercial services offered by UDCs in the Haor region. Both male and female individuals used the UDC services in the Haor region. The questionnaire survey indicates that UDC provides around fourteen services in the Haor region. The replies received include both affirmative ('yes') and negative ('no') answers. The cross-tab analysis reveals the percentage of respondents who utilised various services. The breakdown is as follows: For typing or data entry, 41.6% were male and 58.4% were female. For printing and

photocopying, 43.7% were male and 56.3% were female. Male users of e-mail and female users of internet browsing were 47.2% and 52.8%, respectively. CV and job application services were utilised by 50.9% of males and 49.1% of females. 39% of males and 61% of females took computer, ICT, and English training. 51.1% of males and 48.9% of females used phone calls and video conferencing. Mobile banking services were used by 55.9% of males and 44.1% of females. 44.4% of males and 55.6% of females used scanning and laminating services. Photography services were employed by 45.6% of males and 54.4% of females. 42.9% of females and 57.1% of males used online visa application services. E-tickets for air, bus, and train were used by 48.6% of males and 51.4% of females. 53.7% of females and 46.3% of males used insurance services. Science and technology services were employed by 53% of males and 47% of females. Lastly, industry and commerce services were used by 43.4% of males and 56.6% of females.

Table 61: The nature of union digital services in the category of commercial services sought by women in the Haor area

| Commercial Services | | Gender | |
|---|---|---|---|
| | | Male | Female |
| | | Row N% | Row N% |
| Type/Data entry | Yes | 41.6 | 58.4 |
| | No | 42.8 | 57.2 |
| Printing and Photocopying | Yes | 43.7 | 56.3 |
| | No | 39.0 | 61.0 |
| E-mail and Internet browsing | Yes | 47.2 | 52.8 |
| | No | 40.5 | 59.5 |
| CV and Job application | Yes | 50.9 | 49.1 |
| | No | 38.4 | 61.6 |
| Computer/ICT/English Training | Yes | 39.0 | 61.0 |
| | No | 42.6 | 57.4 |
| Phone/Video Conferencing | Yes | 51.1 | 48.9 |
| | No | 41.1 | 58.9 |
| Mobile Banking / Bank | Yes | 55.9 | 44.1 |
| | No | 37.3 | 62.7 |
| Scanning & Laminating | Yes | 44.4 | 55.6 |
| | No | 40.6 | 59.4 |
| Photography | Yes | 45.6 | 54.4 |
| | No | 40.3 | 59.7 |
| Online Visa application / visa | Yes | 57.1 | 42.9 |

| | | | |
|---|---|---|---|
| | No | 40.9 | 59.1 |
| E-tickets for air/bus/rail | Yes | 48.6 | 51.4 |
| | No | 40.7 | 59.3 |
| Insurance services | Yes | 46.3 | 53.7 |
| | No | 41.8 | 58.2 |
| Science and technology | Yes | 53.0 | 47.0 |
| | No | 41.0 | 59.0 |
| Industry and commerce | Yes | 43.4 | 56.6 |
| | No | 42.2 | 57.8 |

Source: Field Survey, April 2023 to June 2024.

Overall, the primary services utilised by women in the Haor area's UDCs were education-related tasks, such as admission tests, form fill-ups, and public examination results (52.2%). Other commonly sought-after services included downloading government forms (51%); registering births, deaths, and obtaining citizenship certificates (58.3%); accessing healthcare information (60.1%); obtaining a list of VGD or VGF cards (64.6%); performing typing and data entry tasks (58.4%); printing and photocopying documents (56.3%); using email and browsing the internet (52.8%); scanning and laminating documents (55.6%); taking photographs (54.4%); purchasing e-tickets for rail, air, and bus travel (51.4%); engaging in industry and commerce activities (56.6%); exploring tourism opportunities (50%); and receiving computer, ICT, and English language proficiency training (61%).

### 9.5 UDC services sought by women in haor areas: FGD findings

Women in Bangladesh continue to face numerous challenges, as indicated by various literature sources. The haor area represents one of the most underdeveloped regions within the country. Furthermore, women residing in the haor area have access to significantly fewer services in comparison to other regions of the country. Both government and non-government organisations are actively engaged in efforts to enhance the status of women in the country for these reasons. This study aims to investigate the methods by which women can improve their lives through the use of union digital services. The primary objective of this study was to identify the nature of the digital services requested by women in the haor region. The haor region, comprising seven districts in the northeastern part of the country, represents a crucial area for digital services. This study concentrated on four of the specified districts, employing qualitative data gathered from interviews and focus group discussions. The study

encompassed Chatalpar and Goalnagar UDCs located within the Nasirnagar Upazila of the Brahmanbaria district. The Sunamganj district comprises the following upazilas: Tahirpur, Shantiganj, Jagannathpur, Derai, and Dharmapasha. Netrakona district comprises the upazilas of Mohanganj, Atpara, Madan, Kalmakanda, and Khaliajuri. The Khaliajuri Upazila includes the Nogor and Krishnapur UDCs. The research identified the Kytail and Koilati UDCs, located in the Madan and Kalmakanda Upazilas within the Netrakona district. The study designated Tetulia UDC as the representative entity within Mohongonj Upazila, which is characterised as a haor-centric region in the Netrakona district. The research identified essential services that women actively pursued at Nogor UDC. The study identified Krishnapur, a lesser-known UDC in Khaliajuri Upazila, due to its connection with Haor and notable shortcomings in communication and transportation infrastructure. Kishoreganj, a district located in the Haor region, is recognised for its closeness to the Haor wetlands. Kishoreganj, situated on the eastern edge of the district, has been selected by the Dhaka division. The Haor region is comprised of five sub-districts: Itna (Raytoti), Austragram (Purba Astagram), Mithamain (Katkhal), Bajitpur (Dighirpar), and Nikli (Nikli Sadar). Raytoti functions as a haor-based UDC situated in the Itna Upazila. Purba Astagram operates as a union digital centre within the Austagram Upazila. Katkhal serves as a union digital centre, located in the Mithamain Upazila. Dighirpar is positioned in the Bajitpur Upazila. Nikli Sadar is identified as a UDC within the haor region of Nikli Upazila. This study aimed to examine the needs and desires of women in the Haor region, utilising qualitative data collected through focus group discussions.

The research investigated the experiences of various UDCs and their associated regions, with the objective of delivering important insights regarding the digital services accessible to women in the Haor area. The duration of the data collection phase spanned from April 2023 to June 2024. During the month of April, residents of the Haor region participated in the harvesting of their primary agricultural produce. As a result, it was highly challenging to allocate their limited time effectively. Furthermore, data enumerators encountered difficulties related to mobility during the wet season. The season commenced in June and concluded in August; however, its effects extended into September and October. In this season, boats served as the sole mode of transportation for travelling between various locations. The cost of communication during that period was significantly elevated, which posed challenges in data collection. Additionally, the participants encountered challenges in maintaining adherence to

the appointment schedule due to an inadequate communication system. A total of eighty (80) individuals participated in sixteen (16) focus groups. Each group comprised four to six participants. The discussion was centred on the services preferred by women from the UDC in their respective regions. Examine the ways in which UDC contributes to minimising the time, costs, and number of trips that rural women must undertake to obtain government-provided services. The focus group discussion emphasised the utilisation of union digital services to improve women's access to government and information. The interviews conducted were integral to the focus of the study: identifying the primary challenges and socioeconomic limitations that women encounter when accessing services, as well as determining any occurrences of gender-based discrimination. The focus group session thoroughly examined all topics, with participants providing their insights on each item and expressing their preferences for inclusion in the tool (Annexure 5).

The analysis of the transcripts from the focus group interviews revealed eight distinct themes related to women's preference services (Ibid). The study presents the results of the focus group analysis from multiple perspectives. Women in Bangladesh are still struggling under various circumstances, according to different literature. The haor area is one of the most underdeveloped areas across the country. Additionally, women in the haor area receive very limited services compared to other regions in the country. For these reasons, both government and nongovernment organisations are actively working to improve women's status in the country. Consequently, this study aimed to explore how women can enhance their lives by using union digital services. One of the specific objectives of this study was to find out the nature of digital services sought by women in the haor area.

### 9.5.1 Government services

In the Haor region, women accessed government services at UDCs. Women often utilise government services, including birth registration, death certificate issuance, applications for national identification cards (NID), testimonies from the UP chairman, citizenship certificates, and character certificates. Agencies responsible for the registration of births and deaths issue official certificates for both events. Women in their locality use UDCs to submit applications for birth registration for their children to the relevant authorities. Similarly, when there was a requirement for death certificates, individuals proceeded to visit UDCs. Of the total participants, approximately 75% (n = 16) used UDCs in their respective locations for

birth-death registration and certificate acquisition. The FGD data indicates that women in the Haor region express a strong preference for birth and death registration as a government service. The NID card application ranks as the second most -used government service by women in the Haor region. About 25% (n=16) of the participants in the focus group discussion (FGD) reported visiting the UDC to apply for and correct errors on their National Identification (NID) cards. The NID card is issued by the Bangladesh Election Commission following the receipt of applications from individuals. The UDC offers assistance to individuals in Haor, with a particular focus on women, in completing their NID card applications. Local constituents serve as representatives of the government, fulfilling the role of supplying evidence. The local UP chairman will present this testimony to the residents within their jurisdiction, as stated in their application. The UDC entrepreneur designed this application with a specific emphasis on serving the local community, particularly targeting women. UPs are tasked with the issuance of citizenship and character certificates to the residents within the local community. The UDC provides support to women in meeting their needs.

### 9.5.2 Information Services

UDCs in the Haor region also provide information services. This study focuses on two specific areas of information: agricultural and employment-related. The results of the FGDs highlighted that only 12.5% (n = 16) of the participants recognised that women visited UDCs specifically for obtaining agriculture-related information. Similarly, a total of 80 participants, accounting for 12.5% (n = 16) of the sample, expressed agreement with the notion that women went to UDCs with the purpose of obtaining employment-related information.

### 9.5.3 Private Services

In Haor, UDCs also provide various private services. The range of private services available in the region includes photocopying, photography, laminating, mobile banking, email, computer composition, and government circular printing. Among the 80 participants in the FGD, only 31.25% (n = 16) acknowledged that women came to the UDC specifically to get photocopies. Similarly, 18.75% of participants (n = 16) said that women frequented UDC for photographic purposes. Similarly, 18.75% (n = 16) of the participants stated that women came to UDC specifically to use the laminating service. In addition, a mere 12.5% (n = 16) of participants agreed that women were seeking mobile banking services from the UDCs. Only

6.25 per cent (n = 16) admitted that women used UDC for email. Once again, a mere 6.25 per cent of the participants (n = 16) admitted that women came to UDC for computer composition. Furthermore, a mere 6.25 per cent (n = 16) of participants agreed that women visited UDC specifically for the purpose of printing government circulars.

### 9.5.4 Education services

Participants in the focus group expressed a range of opinions concerning education services. Education services include various functions such as the submission of online applications for equivalent certificates, correction of a student's name and age, withdrawal of certificates, acquisition of transcripts, obtaining registration cards, and receipt of admit cards. Public examinations encompass secondary school certificates as well as higher secondary school certificates. The examinations are organised by the different boards for intermediate and secondary education located in Dhaka, Cumilla, Rajshahi, Jossore, Chattogram, Mymensingh, Sylhet, Barishal, and Dinajpur. The Bangladesh Technical Education Board and the Bangladesh Madrasha Education Board perform equivalent functions. The education boards release the results of public examinations or their equivalents on their designated websites. Students, especially female students, and their guardians commonly utilise the services of UDC in their local areas to obtain information regarding their children's results. Additionally, online applications for university admission and scholarships or stipends constitute critical services within the education sector. At present, individuals have the opportunity to submit applications for admission to higher education institutions and scholarships, both at home and abroad. The provision of these services has resulted in a rise in the education rates of women and girls in the region.

> “The centre received numerous requests for different services from women and girls. Women living in the Haor region primarily sought information concerning circulars related to admissions processes at public universities and honours colleges associated with national universities. A considerable portion of students from the Haor region have enrolled in prestigious institutions and universities in different divisions and districts, including Dhaka, while others have secured admission to distinguished colleges at the district level. Entrepreneurs affiliated with UDC facilitate access to these services for local students. Consequently, UDC facilitates and improves their educational experience” (FGD-V).

The demand for educational services varies across the Haor regions. Women and girls engaged in educational pursuits across various Haor-based UDCs, including Goalnagar in Nasirnagar, Joysree in Dharmapasha, Joykalas in Shantiganj, Kolkolia in Jagannathpur, Sukari in Atpara, Purbo-Austragram in Austragram, Dighirpar in Bajitpur, and Nikli Sadar in Nikli Upazilas. The FGD indicates that these UDCs in the Haor region hold greater significance compared to others.

### 9.5.5 Livelihood skill development training

The participants in the focus group discussion exhibited differing degrees of agreement. UDCs provided vocational training to a varied demographic of young individuals, encompassing both male and female participants within distinct associations. The UDCs provided extensive training in computer operations to multiple young recruits. After completing their computer training at the UDCs, several young trainees-initiated self-employment opportunities in their respective fields. Of the 80 participants in the focus group discussion, only 37.5% (n = 16) reported that young women actively sought computer operating training from UDCs. UDC provides training on the operation of sewing machines. Moreover, among the total participants (n = 16), only 6.25 per cent indicated that women had undergone training in operating sewing machines at UDC. Additionally, a total of 80 participants, representing 12.5% (n = 16) of the sample, indicated their agreement regarding women's interest in pursuing empowerment training from the UDCs.

### 9.5.6 Health services

Women accessed various healthcare services, which included telemedicine, medical visa applications, consultations with physicians or specialists, registration for the COVID-19 vaccine, information on child vaccinations, and utilising Daktarbari, a digital health service platform. Among the 80 participants in the focus group discussion, only 50% (n = 16) reported that women were using UDCs for telemedicine services. In a similar vein, 25% (n = 16) of participants indicated that women visited UDCs specifically for consultations with doctors or other healthcare professionals. A total of 80 participants were involved in the study, with 6.5% of the interviewees (n = 16) indicating that women were seeking to enrol in the COVID-19 vaccine. Similarly, only 6% (n = 16) of participants indicated that women pursued UDC specifically for the purpose of applying for medical visas. Furthermore, only 6% (n = 16) of participants indicated that women visited UDCs specifically to obtain

information regarding child vaccination. Additionally, 6.5% (n = 16) of the participants indicated that women sought UDC services specifically for daktarbari, which encompasses blood collection and doctor's appointments.

### 9.5.7 Social safety net services

The focus group discussions exhibit varying perspectives regarding social safety net programmes. In the Haor region, social safety net services encompass programmes such as Vulnerable Group Development (VGD), Vulnerable Group Feeding (VGF), a maternity allowance scheme for economically disadvantaged individuals, an old age allowance, allowances for widows, and allowances for financially disadvantaged individuals with disabilities. In a total of 16 focus group discussions regarding recipients of social safety net services, a substantial majority (94%) indicated that women frequently access the UDC to utilise services associated with VGDs and VGF cards. This service is one of UDC's most significant offerings designed for women in the Hoar region. The maternity payment program represented a significant social welfare initiative, specifically aimed at women in the Hoar region. This allowance was established to assist rural women in achieving sufficient nutrition in their meals. Approximately 81% (n = 16) of participants in the focus group discussion indicated that they received this financial benefit during their pregnancy. The UDC offers support in this context.

The elderly allowance is a financial support program designed to assist senior citizens in managing their living expenses. This allowance aims to provide a stable source of income for individuals aged 65 and older, ensuring they can maintain a reasonable standard of living. Eligibility criteria and application processes may vary by region, and recipients are typically required to meet specific income thresholds to qualify. The government allocated a monthly allowance of 600 BDT to elderly individuals, placing particular emphasis on women. Approximately 38% of the participants in the focus group discussion (n = 16) indicated that the government transferred funds to their personal cell phone numbers as a form of old-age allowance. Consequently, they proceeded to UDCs to withdraw their allowance. An allowance for widows was one of the social safety net programmes in this region. Often, societal norms and familial structures often overlook the contributions and status of widowed women, resulting in a lack of genuine respect for their experiences and roles. This programme aims to deliver social security and foster socioeconomic advancement, enhance

the social status of participants and their families, strengthen mental resilience, and provide financial support for healthcare and improved nutrition. The government has allocated a monthly allowance of 550 BDT to widows residing in the Haor region. About 25% (n = 16) of the participants in the focus group discussion indicated that women approached the UDC with the purpose of obtaining financial assistance specifically allocated for widows in their respective areas. A nationwide social safety net initiative offers financial assistance to individuals with disabilities who are experiencing financial hardship. The recipients were allocated a monthly disbursement of 850 BDT from the Ministry of Social Welfare. The UDCs offered support to individuals who met the eligibility criteria for this benefit. Among the FGD participants, 19% (n = 16) indicated that women frequently visited UDCs to obtain this financial assistance. In the focus group discussions, 31% (n = 16) of participants indicated that women pursued government allowances at the UDCs in their localities.

> "A majority of women convened at the UDC to access various government benefits. Women regularly accessed UDCs to obtain essential services, including vulnerable group development (VGD), vulnerable group feeding (VGF), allowances for widows, old age allowances, support for insolvent handicapped individuals, particularly women, and maternity allowances" (FGD-III).

Additionally, women pursued microcredit from the UDCs. The Social Safety Net project involves the provision of microcredit to women residing in rural areas, with the objective of promoting self-empowerment. The project aims to implement social safeguards specifically designed for women. The execution of the program is governed by the Ministry of Women and Child Affairs. Approximately 12.5% (n = 16) of participants in the focus group discussion indicated that women residing in the Haor region actively pursued microcredit services from UDCs.

> "The population of the Raytuti union, located in the Itna sub-district of Kishoreganj, consisted solely of women. The focus group discussion participants indicated that the microcredit program received positive feedback from women pursuing microcredit services at UDCs for the initiation of small businesses" (FGD-XIV).

### 9.5.8 Disaster management services

Numerous government departments have executed the nationwide social safety net initiative. During flood occurrences, the Ministry of Food and Disaster Management and Relief is tasked with facilitating open market sales (OMS), providing assistance, and ensuring shelter availability. Individuals with low incomes typically reside in this locality. Inflation has resulted in their inability to purchase essential items from local markets or stores. The government commenced open-market sales through the Ministry of Food to serve the public interest. Subsidies in this market specifically target individuals with low incomes. The Ministry of Disaster Management and Relief is responsible for providing assistance and accommodations during flooding events. The Haor region exhibits elevated land moisture levels. The region regularly encounters issues associated with flooding. The two ministries assisted the victims through the provision of field administration and local representation. Among the participants in the focus group discussion, only 12.5% (n = 16) indicated that women sought OMS services at UDCs within their local communities.

> "The Sukari and Nikli Sadar UDC provided a welcoming environment for female individuals with defined objectives, such as acquiring Open Market Sales or OMS cards, receiving COVID-19 vaccinations, and accessing various government allowances" (FGD-IX).

A total of 16 participants, representing 12.5% of the sample, acknowledged that women sought refuge and shelter in UDCs during flood conditions.

> "Women at Chatalpar and Tahirpur Sadar UDC frequently utilised the various services offered by the centre. This area is frequently susceptible to flooding. Female individuals occasionally attended the Chatalpar UDC to seek relief services" (FGD-I).

The Haor region demonstrates similar lifestyles and cultures that are characterised by nearly identical requirements, albeit with some minor distinctions. The FGD study indicates that women in the Haor area exhibit a preference for a range of services. The services provided encompass a range of administrative functions, including birth and death registration, health-related services, and educational services such as online applications for university admission and board examination results. Additional services include applications for stipends and job opportunities; access to government circulars and downloadable forms; attestation

certificates; citizen certificates; and testimonies from the UP chairman. Training applications for sewing machines, computer skills, and English language proficiency through the British Council are also available. Furthermore, the list of VGD and VGF cards; allowances for maternity, old age, widowhood, and disability support; overseas visa applications; agricultural information; mobile banking services; OMS cards; electricity bill payments; applications for NID cards; COVID-19 vaccinations for children; email services; computer composition, printing, photocopying, and laminating; photography; and assistance during floods, including livelihood training, micro-credit, and insurance services, are included in this comprehensive list.

### 9.6 Whether or not there is any gender disparity in receiving UDC services

Table 62 indicates that 91.94% of respondents believe that the services provided by UDC are accessible to all individuals, irrespective of gender. Nonetheless, only 8.06% of individuals maintain the perspective that equitable access is not universally available. The gender distribution includes both male and female participants, with 90.5% of males indicating that equal access is available to all, while 93.0% of females share this perspective. Only 9.5% of male participants believe that there is unequal access to services provided by UDC. Conversely, only 7% of female participants indicate scepticism regarding the equitable accessibility of UDC services for all individuals.

Table 62: The users' perceptions about the status of equal access to UDC-provided services with gender preference

| Gender | Whether male or female, everybody has equal access to UDC-provided services. | | Total |
|---|---|---|---|
| | Yes | No | |
| Male | 90.50* | 9.50 | 100 |
| Female | 93.00 | 7.00 | 100 |
| Total | 91.94 | 8.06 | 100 |
| *Row percentage (% within Gender) | | | |

Source: Field Survey, April 2023 to June 2024

Factors including limited access to education and digital literacy, hygiene challenges, and scarcity of water resources contribute to gender disparities in the Haor regions of Bangladesh. Despite ongoing initiatives to mitigate these challenges, women continue to encounter barriers in accessing digital services. In the Haor area, there are no observed gender discrepancies; however, women are provided with supplementary services. No gender differences were identified in the UDCs; however, appropriate measures will be implemented if deemed necessary. The implementation of UDC services has led to a reduction in gender discrepancies, demonstrating equitable fairness between men and women. A participant indicated

> "The low levels of education among women, coupled with the mobility challenges they encounter as a result of water-related issues, may explain the gender disparities observed in the Haor region. UDC has mitigated the challenges faced by women and, at times, provides improved access to services" (IDI XXX).

At present, the utilisation of UDC services is greater among women compared to men, and women are also afforded a higher level of priority in these services. In this context, women are afforded a distinct advantage and are assigned a marginally elevated priority. A participant indicated

> "Individuals in the Haor region access UDC services uniformly, regardless of gender. The Haor region occasionally places a higher emphasis on women. According to the UP Chairman, there has been a decrease in discrimination attributed to heightened awareness".

He also added that

> "Gender equality in the use of delivery services is dependent on the representative managing the UDC. UDC operates under the direct supervision and guidance of the UP chairman. Should the UP chairman be actively engaged, UDC provides assistance to persons regardless of gender identity" (IDI-XXXI).

The predominant demographic of employees at the union digital centre in the Haor region consists of women, indicating the absence of discriminatory practices. There are distinctions in service delivery, with men receiving higher priority and demonstrating superior

performance compared to women in aspects of mobility and observation. Overall, there is a consensus in civil society that prioritising women is essential. A female response indicates a potential gender disparity; however, UDC demonstrates no evidence of gender asymmetry. A participant indicated

> "Contrary to popular belief, the union digital centre in Haor predominantly employs women; however, males occasionally exceed them in mobility and observation capabilities.This initiative fosters gender equality and mitigates the gender gap" (IDI XXXII).

Female entrepreneurs encounter numerous challenges in delivering UDC services, including low literacy rates, insufficient knowledge of digital technologies, connectivity issues, geographical constraints, and inadequate communication. Frequent encounters with rudeness from customers and challenging attitudes from male users present difficulties in maintaining the operations of the business. Additional issues include insufficient energy, concerns regarding the network, and a lack of awareness among rural inhabitants. A participant indicated

> "Female entrepreneurs face multiple challenges when providing union digital services. The identified challenges encompass illiteracy, restricted awareness of digital technology, issues with network connectivity, geographical distances, insufficient communication infrastructure, discourteous behaviour by service seekers and male users, unreliable electricity supply, and constrained earning prospects" (IDI XXXIII).

The Union Parishad has opted not to extend assistance, and an established payment framework is currently absent. The limited earning potential is attributable to inadequate communication infrastructure, weak network connections, and a lack of sufficient equipment. Cooperation and assistance are available in specific areas; however, challenges persist, including slow internet connections, power outages, and a lack of dedicated restrooms. Despite these challenges, female entrepreneurs continue to work towards improving their communities. A participant indicated

> "In the haor region, women are frequently given precedence owing to their challenges with public speaking and mobility. Furthermore, relatives and influential family members of the entrepreneurs receive preferential treatment from UDC. Services are

offered on a first-come, first-served basis, with priority given to pregnant women. Under specific conditions, these services are made available at an accelerated pace" (IDI XXXIV).

Rural women entrepreneurs have restricted income as a result of a mostly male customer demographic, often experiencing discomfort and difficulties in reaching out to UDCs after natural calamities. They exhibit deficiencies in their ability to use machines and equipment, as well as a notable absence in their professional demeanour in an office setting. To tackle these problems, a comprehensive approach that encompasses improvements in infrastructure, increased financial accessibility, a decrease in gender-based discrimination, and enhanced educational possibilities is required. Additional obstacles include adverse weather conditions, limited accessibility, network disruptions, power failures, absence of collaboration, sluggish internet connectivity, and inadequate communication infrastructure. A participant said that

> “Rural women entrepreneurs face challenges, including insufficient income, dependence on male counterparts, and difficulties accessing union digital centres during natural disasters. A comprehensive strategy that incorporates improvements in infrastructure, expansion of financial resources, eradication of gender-based discrimination, and the provision of educational and training opportunities is necessary" (IDI XXXV).

### 9.7 Major issues and socio-economic obstacles for women and UDCs

A2I has effectively implemented the union digital centre project, facilitated by collaboration with local government divisions at the grassroots level. UDC is establishing a link between governmental entities and disadvantaged populations in rural areas. Research conducted in the Haor area identified substantial challenges faced by female entrepreneurs in relation to the UDC. Data was collected from various stakeholders, including local government officials, Upazila Women Affairs Officers, civil society members, UDC entrepreneurs, and UDC service users. The primary difficulties are classified into two categories based on the responses: women, encompassing service seekers, entrepreneurs, and UDC perspectives.

### 9.7.1 Primary obstacles faced by female entrepreneurs

The haor region in Bangladesh faces numerous challenges for women entrepreneurs, including low literacy rates, limited digital technology knowledge, connectivity issues, geographical remoteness, and insufficient communication. These obstacles include inadequate communication infrastructure, network connectivity, and insufficient technological resources. Rural women entrepreneurs also face a scarcity of revenue streams, with males being the majority of beneficiaries. To address these issues, a comprehensive approach is needed, including improving infrastructure, expanding financial inclusion, reducing gender-based bias, and providing educational and training opportunities. Government authorities argue that the UDC faces social and cultural obstacles, insufficient transport, communication gaps, and a lack of training for female entrepreneurs. These issues often result in poor treatment and insufficient internet connections, leading to load shedding and congestion. The UDC aims to alleviate these concerns by offering a range of governmental and non-governmental services. Civil society representatives argue that the patriarchal social structure and perception of women's competence in the Union Parishad contribute to the obstacles faced by women entrepreneurs in the UDC. The UDC, which was founded at the federal level, aims to promote digitalisation in Bangladesh and is operated through a partnership between the public and commercial sectors. Women have been participating in performances at the UDC since it was established. This journey poses significant challenges for women. They have encountered numerous challenges, which are further detailed below.

#### 9.7.1.1 Inadequate communication systems

The research encompasses the entirety of the Haor region in Bangladesh. Bangladesh's northeast contains the Haor region. This region is primarily defined by its low elevation. The object has remained underwater for approximately six months. Therefore, during the wet season, the only means of communication are boats. In the latter half of the year, transportation methods included bicycles, motorcycles, autorickshaws, and walking. Additionally, the current infrastructure lacks sufficient roads and available automobiles. The insufficient communication infrastructure in the area led to a decline in women's interest in attending UDC. Additionally, female entrepreneurs encounter comparable challenges during their travels to and from the UDC.

#### 9.7.1.2 Natural disasters

The Haor region is in the northeastern part of Bangladesh. The area comprises seven districts, each of which shares a boundary with the Indian state of Meghalaya. The Haor area is located at the border of Meghalaya and features elevated hills. In this region, flooding is a common natural disaster. Flash floods represent a specific type of natural disaster. The Haor must separate them from conventional existence. Their employment was terminated as a result of the flood. Furthermore, for nearly six months, all roadways have been inundated. Effective communication presents significant challenges during the flood season. As a result, female entrepreneurs frequently did not engage in UDC. Consequently, the occurrence of natural disasters presents substantial challenges to the continuity of UDC services.

#### 9.7.1.3 Insufficient financial resources

The limited availability of financial resources in their area presents a considerable obstacle for female entrepreneurs. Initially, there was significant interest among women in employment at the UDC. However, the enthusiasm among female entrepreneurs has decreased due to insufficient compensation. The support and encouragement for female entrepreneurs to persist at UDC is insufficient. Their limited income does not provide sufficient support for their family. Female entrepreneurs in rural areas are resigning from the UDC as a result of insufficient remuneration. The retention of female entrepreneurs at the UDC represents a significant issue.

#### 9.7.1.4 Create a UDC in the vicinity of the village market

Although the majority of UDCs are located within the Union Parishad Complex, the data indicates that not all UDCs are positioned on UP premises. Multiple UDC facilities are situated in proximity to rural bazaars or the nearest rural market. As a result, women living in the Haor region exhibit a decreased likelihood of attending UDC when it is located in the adjacent rural market. Additionally, there are other factors contributing to their apparent lack of interest. Additionally, religious mandates, public sentiment, and cultural norms present considerable barriers for rural women in accessing UDCs within their region. Rural women have achieved significant progress over the past two to three decades; however, they continue to demonstrate a cautious and deferential approach to traditional norms. As a result, rural women lack familiarity with the practice of attending rural markets or digital centres. Women

exhibit fear in the presence of unfamiliar males, with the marketplace serving as the designated environment for their interactions.

#### 9.7.1.5 Difficulties of social security

Social security plays a vital role for women in the Haor region, enabling them to participate in employment beyond their domestic duties. Women in the region encounter obstacles to obtaining social security, which include harassment while travelling from the union digital centres to their residences. This issue impacts not only female-owned businesses but also women and girls affiliated with UDC. The primary issue identified by UDC is the absence of social security provisions for rural women, encompassing both entrepreneurs and consumers.

#### 9.7.1.6 Sexual harassment

Another issue is the prevalence of sexual harassment at the UDC in the Haor region. Male and female UDC entrepreneurs' function within the same environment. Female entrepreneurs have occasionally encountered instances of sexual harassment from their male counterparts. Additionally, there is notable dissatisfaction with the UP chairman, who requested inappropriate personal favours. Furthermore, adolescent gang members perpetrate verbal harassment directed at women and girls as they walk by. This behaviour is commonly identified as Eve teasing. The situation presents a significant challenge.

#### 9.7.1.7 Lack of adequate sanitary facilities for women

The insufficient availability of sanitary facilities presents a significant challenge for female entrepreneurs. The majority of UDCs did not have separate lavatory facilities. Both male and female entrepreneurs used the same lavatory facilities. The condition is not consistently pristine. The situation presents a considerable risk to hygiene standards. Additionally, female UDC users must wait for their service. Consequently, individuals are required to use the restroom at certain intervals. Therefore, it is essential for both male and female UDC users to prioritise the cleanliness and functionality of the sanitary facilities. This issue impacts the service delivery process of UDC.

#### 9.7.1.8 Establishing robust connections with the elected officials

The chairman of the Union Parishad possesses the primary authority to oversee the management of the union digital centre. The chairman of the UP subsequently designates the UDC entrepreneurs as the preferred selection. The chairman of the UP exerts significant influence over the entrepreneur selection process. The term of UP chairman is not permanent. Elected representatives exercise their authority in alignment with the expectations of the general public. If the existing UP chairperson decides not to participate in the upcoming election for any reason, the newly elected chairman typically replaces the entrepreneurs appointed by the previous chairman. As a result, a woman entrepreneur faces the potential of losing her job.

#### 9.7.1.9 Early marriage

Marital concerns constituted an additional factor influencing female entrepreneurs to discontinue their professions at UDCs. Well-educated and young individuals are often encouraged to pursue entrepreneurship by joining the UDC. The typical age range for female marriage in rural areas is generally between 14 and 20 years. In the study area, female entrepreneurs initiated their professional journeys at UDC at the ages of 15 and 16. Female entrepreneurs are encouraged to consider the timing of marriage without further postponement. The family have been coordinating arrangements for the wedding. Early marriage requires a reallocation of responsibilities for female entrepreneurs. Generally, the legal firm will refrain from endorsing their ongoing employment.

#### 9.7.1.10 Health issue

Maternity considerably impacts women's capacity to participate in the workforce. Additionally, upon becoming pregnant, a female entrepreneur must complete a gestation period lasting approximately 10 months. Although a six-month maternity break was taken, there remains a necessity for relaxation. While there are no legal barriers to obtaining this compensation, they are unable to return to work due to family responsibilities. As a result, they are required to resign from the UDC.

#### 9.7.1.11 Problem of inadequate capital

The UDC was established as a result of collaboration between public and private entities. Entrepreneurs are required to allocate resources towards enhancing service quality and

ensuring availability to effectively engage their clientele. The financing is essential for the enhanced UDC and the commencement of in-person services. A deficiency of financial resources is one of the causes of these problems. As a result, they are required to resign from the UDC.

#### 9.7.1.12 Insufficient income level

Throughout that period, digital centres delivered services to both urban and rural regions, whereas UDC exclusively served rural areas, including Haor. The profitability of entrepreneurs is determined by the services they offer and their skills. Alternatively, they are required to face the consequences. The findings of the study indicate that a significant contributing factor is the comparatively low income of female entrepreneurs. The existing income levels of female entrepreneurs are inadequate. The research indicates that a considerable percentage of entrepreneurs in the Haor region generate earnings of less than two hundred taka per day. As a result, they cannot maintain their livelihood with this funding and are required to leave the UDC.

#### 9.7.1.13 Lack of adequate training

UDC offers a comprehensive array of services across government, information, and commercial sectors. Services can be classified into two distinct categories: online and offline. Entrepreneurs from UDC participated in numerous training sessions facilitated by the Deputy Commissioner's Office. Additionally, the competencies of female entrepreneurs are insufficient. Given these circumstances, they must exert all efforts to deliver services. Consequently, their situation presents an additional challenge that prompts the decision to leave UDC.

#### 9.7.1.14 Insufficient evaluation of performance

The government has established the union digital centre; however, a legislative framework for assessing corporate performance is presently absent. As a result, although female entrepreneurs may invest more time in their work than their male counterparts, the distribution of rewards does not correspond to their level of success. This limitation restricts female entrepreneurs from applying further effort at the UDC. The lack of performance reviews is contributing to a decrease in motivation among female entrepreneurs at UDC.

#### 9.7.1.15 Workplace limitations on activities

The UDC frequently exhibits a deficiency in autonomous infrastructure. The UDC is presently operating from the premises of the Union Parishad. The UDC typically involves collaborative initiatives between male and female entrepreneurs. However, a situation presents itself: a male entrepreneur is seeking to establish dominance over a female entrepreneur. The chairman and secretary of the UP receive no compensation for their official duties. This factor contributes to the departure of female entrepreneurs from the UDC. Consequently, establishing a conducive atmosphere in a professional setting like UDC is a significant undertaking.

#### 9.7.1.16 Lack of sufficient family assistance

Women in the workforce rely on their family members for assistance. Entrepreneurship in the Haor district of Bangladesh presents considerable challenges. Women living in rural areas must efficiently manage their family members to access employment opportunities within governmental or non-governmental organisations. Women face challenges related to uncertainty stemming from social security issues. A woman is unable to resolve a complex cultural issue independently; in this instance, assistance from her family is required. As a result, it is a common factor contributing to entrepreneurial dropouts from the UDC.

#### 9.7.1.17 Job insecurity

The UDC and government does not classify entrepreneurship as a public service. As a result, entrepreneurs in Union Parishad received government support, which included computer equipment, internet access, and a designated space for the establishment of a digital centre. This collaboration involves the joint efforts of governmental entities and private sector organisations. As a result, the revenue of the UDC is currently under examination. The system may not consistently meet the requirements of UDC enterprises. As a result, the expected income is not maintained over the duration of the month. In the absence of the UP chairman's involvement, there exists a potential risk of losing the opportunity at any given moment. Female entrepreneurs exited the UDC as a result of this factor and a lack of employment stability.

#### 9.7.1.18 Improved employment opportunities

The UDC serves as a digital platform designed to enable capable young women and girls to actively participate in efforts aimed at poverty reduction. They then proceed on a mission to identify candidates with significant potential. In this scenario, individuals are simultaneously sustaining their roles at UDC while pursuing permanent employment opportunities in both the public and private sectors. Upon identifying a viable job opportunity, individuals opt to leave the UDC to engage in entrepreneurship or assist as entrepreneurs in the Haor region. As a result, UDCs face challenges in retaining female entrepreneurs, presenting a notable obstacle.

#### 9.7.1.19 Misinterpretation of religious rules

Misinterpretation of Religion Individuals in rural areas predominantly follow religious rules. They consistently attempt to comply with the tenets and doctrines of their faith. A considerable proportion of older individuals and religious leaders in the Haor region exhibit a negative perspective regarding the employment of rural women outside their home environments. The use of religion serves as a mechanism to restrict women's mobility outside their homes. Women in the Haor region, specifically at UDC, sometimes face religious barriers when pursuing entrepreneurial endeavours.

### 9.7.2 Key obstacles faced by union digital centres

The study analysed multiple challenges, including insufficient training, limited financial resources, corruption, inadequate government support, favouritism, insufficient promotion, local political interference, inadequate infrastructure, device scarcity, a lack of female entrepreneurs, slow internet connectivity, server issues, communication and transportation difficulties, a shortage of skilled entrepreneurs, inadequate electricity supply, power outages, and communication gaps. The report highlighted the necessity for improved infrastructure and communication to address these issues.

#### 9.7.2.1 Lack of explicit guidelines and policies for UDC management

The UDC has been delivering services to rural communities for approximately fifteen years, commencing in 2009. In light of the lack of explicit standards and regulations, the UDC management committee is offering support to UDCs. The efforts of the chairman and the UP

members were met with negative feedback. The chairman of UP is tasked with the oversight of the UDCs in their role as ex officio. Effective management necessitates the establishment of clear directives, rules, or policies. Participants in the Haor region reported that the UP chairman exerts control over the UDC based on personal preferences. The management of UDCs in the Hoar region presents a considerable challenge.

#### 9.7.2.2 Lack of explicit guidelines and policies for selecting entrepreneurs

Approximately 11,000 UDC entrepreneurs are currently active across the nation. There is insufficient evidence regarding the selection process employed by entrepreneurs. The UP chairman has not received a clear or specific guideline or policy regarding the recruitment of UDC entrepreneurs. Selecting an entrepreneur and monitoring their development in the absence of defined standards or regulations presents a considerable challenge. As a result, this condition leads to multiple allegations directed at the UP chairman and its members. The chairman of the UP faces allegations of corruption, nepotism, and related misconduct.

#### 9.7.2.3 Insufficiency of proficient female entrepreneurs

Possessing proficient computer skills and a strong understanding of information and communication technology (ICT) is highly advantageous for UDC entrepreneurs. Selection of UDC entrepreneurs is now contingent upon the endorsement provided by the local UP chairman. The impact of local elected officials has already undermined the UDCs, despite their establishment as public-private partnerships. The individuals in question are entrepreneurs who were selected based on their personal interests rather than their skill sets. Customers reported dissatisfaction with the skills and expertise of UDC entrepreneurs, who were employed through nepotistic practices.

#### 9.7.2.4 Insufficient spaces

The union digital centres have been operational for over fifteen years, delivering digital services to underprivileged areas in Haor, Bangladesh. They are not located in a separate office; rather, they are situated within the Union Parishad buildings. The union digital centre entrepreneurs report a lack of adequate space, which requires the inclusion of both male and female entrepreneurs to serve the communities, resulting in long queues outside the UDC.

#### 9.7.2.5 Lack of knowledge among elected officials on the use of ICT

A considerable number of individuals demonstrate a pronounced resistance to changes within society. The chairman and members of UP demonstrate a deficiency in understanding the operational aspects and benefits of ICT. As a result, they are unable to accept this change, understand its intent, or recognise its benefits. This situation presents a significant challenge for UDC.

#### 9.7.2.6 Entrepreneurs in control

The UP Chairman, serving as a local stakeholder, collaborates with entrepreneurs to manage the UDC. The UP chairman collaborates with the Upazila Nirbahi Officer (UNO) to verify entrepreneurs. The chairman of UP recruits and oversees dedicated entrepreneurs, ensuring their success based on the research findings. The success of the UDC entrepreneur depends on the emotional well-being of the UP chairman. The existing UDC entrepreneurs would experience negative impacts on their success in the event of a change in the UP chairman. For this reason, UDC entrepreneurs consistently prioritise their employment practices.

#### 9.7.2.7 The internet's sluggish pace

The government is in the process of implementing broadband internet connections for UDCs; however, numerous UDCs continue to experience a lack of this connectivity. As a result, UDC firms are progressively adopting mobile internet technology. The speed of this internet connection is suboptimal. There is therefore a waiting period before the expected treatment is provided to those who need it. Individuals are facing difficulties as a result of a flawed internet infrastructure. UDC entrepreneurs may, at times, face complex negotiations with customers.

#### 9.7.2.8 Insufficient electricity supply

The electricity supply in the Haor region does not meet the needs of the population. As a result, power outages frequently occur in various sectors throughout the Haor area. Following the investigation, it has been determined that UDC is currently facing an electrical deficit. The distribution of digital services has been disrupted. This state is defined by its inefficiency and a propensity to utilise excessive time and resources. The frequent occurrence of load shedding during the provision of digital services results in increased consumer frustration.

#### 9.7.2.9 Political influence

Political influence is a significant concern. This phenomenon is observed in the UDC entrepreneur selection process. The political leader seeks to establish authority over UDC entrepreneurs and gain their favour when digital services are required. Political leaders at the local level, including those in Union Parishad, aim to leverage businesses during national and local elections. The situation represents a significant challenge for UDC entrepreneurs regardless of gender.

#### 9.7.2.10 Insufficient knowledge of UDC

The UDC serves as the sole entity that facilitates a connection between the government and rural populations. The UDC, developed as part of digitalisation initiatives in Bangladesh, has been delivering services to rural regions since 2010. There is a deficiency in public awareness regarding the activities and services offered at the union digital centre. In this scenario, UDC is targeting a specific demographic rather than addressing a wide audience. The remaining population did not benefit from the UDC due to their limited understanding of it. Therefore, it is clear that the success of UDC depends on the community's awareness.

#### 9.7.2.11 Digital equipment that is not being fully exploited

An efficient service delivery system requires the implementation of adequate and up-to-date digital technologies. The analysis indicates that the majority of UDCs in the Haor region are deficient in adequate digital resources. A limited number of computers and printers are owned by them. Furthermore, UDCs in the region are using outdated desktop computers and printers, despite the availability of more advanced models of the same digital equipment in the market. The capacity of RAM influences the operational speed of electronic devices. As a result, the duration for the supply of services has been extended.

#### 9.7.2.12 Challenges encountered by the UNO office in monitoring and overseeing the UDC

Since its inception, UDC has operated under the direct oversight of the Upazila administration. The Upazila Nirbahi Officer is responsible for supervising the operation and performance of the UDC. The UNO office led the formation of UDC and selected Union Parishad as its location. If considered necessary, the UNO office additionally offers logistical assistance to the UDC. The UNO office is currently supervising UDC, with support from the

relevant UP chairman. The primary function of the UNO office is to implement governmental policy at the upazila level. As a result, the UNO office faces difficulties in implementing government decisions, primarily due to limitations in resources and a lack of sufficient staff and personnel. As a result, the effective monitoring of UDCs in the Haor area presents a significant challenge.

#### 9.7.2.13 Challenges encountered by the DC office in coordinating and overseeing the UDC

The district administration serves as the central hub for local field administration, operating under the jurisdiction of the Deputy Commissioner Office within the government framework. The DC office coordinates activities among multiple ministries and departments, manages revenue generation, and maintains order within the jurisdiction of the district administration. UDC was established in 2010 as a component of the Access to Information initiative, receiving support from the Prime Minister's Office and the United Nations Development Programme. The DC office is responsible for executing this programme, which involves establishing an Information and Communication Technology unit with assistance from the Bangladesh Computer Council. The ICT cell is composed of an additional deputy commissioner, an assistant commissioner, and either a programmer or an assistant programmer. The programmer is stationed in the DC office, whereas the assistant programmer is located at the Upazila administration. Survey results indicate that, on average, each district comprises ninety-eight UDCs within its region, placing a burden on the DC office to coordinate UDCs across the Haor area. The oversight and supervision of UDCs have been inadequate, attributed to an insufficient number of personnel in DC offices. The challenge of providing adequate monitoring and supervision to all UDCs in the Haor area arises from limitations in resources and staffing.

### 9.8 Summary of the chapter

This chapter focusses on the presentation of data, encompassing both qualitative and quantitative aspects. The data presentation indicates that the dissemination strategies for UDC-provided services include paper-based methods, verbal communication, email, telephone interactions, and home delivery services. Users' perceptions of UDC's performance in terms of internet speed, availability of necessary equipment, skilled entrepreneurs, and overall service delivery show moderate satisfaction levels. In contrast, the electricity supply

at the UDC and the behaviour of entrepreneurs indicate high levels of satisfaction. Women express moderate agreement with statements concerning the impact of UDC services on their accessibility to government, information, and commercial services, as well as the improvement of health information and telemedicine, the promotion of education and literacy, and increased participation of women in the dicision making process of households and local government institutions. Users demonstrate a strong consensus regarding the importance of promoting computer literacy and enhancing employment opportunities for women. The study indicates that women utilise a range of union digital services, such as admission tests, form fill-ups, and public examination results, with a usage rate of 52.2%. Services frequently requested included the downloading of government forms (51%); registration of births, deaths, and acquisition of citizenship certificates (58.3%); access to healthcare information (60.1%); procurement of VGD or VGF card lists (64.6%); execution of typing and data entry tasks (58.4%); printing and photocopying of documents (56.3%); utilisation of email and internet browsing (52.8%); scanning and laminating of documents (55.6%); photography services (54.4%); purchase of e-tickets for rail, air, and bus travel (51.4%); participation in industry and commerce activities (56.6%); exploration of tourism opportunities (50%); and provision of computer, ICT, and English language proficiency training (61%). The study indicated that there is no observed gender-based disparity in the receipt of union digital services within the studied areas.

The research additionally identified several challenges faced by both women and UDC in haor regions. The problems identified include poor communication systems, the effects of natural disasters, not having enough money, the need to set up a UDC close to the village market, issues with social security, cases of sexual harassment, lack of proper sanitary facilities for women, the need for better connections with elected officials, the common occurrence of early marriage, health issues, problems with not having enough capital, low income levels, lack of proper training, inadequate performance reviews, limits on workforce activities, insufficient family support, job insecurity, the need for better job opportunities, and misunderstandings of religious rules. The challenges related to UDC include not having clear rules and policies for managing UDC, no specific criteria for choosing entrepreneurs, a lack of skilled female entrepreneurs, not enough physical space, elected officials not knowing much about using ICT, male entrepreneurs being too dominant, slow internet, not enough electricity, political interference, a lack of understanding about UDC, not using digital

equipment enough, difficulties for the UNO office in monitoring UDC, and problems for the DC office in coordinating UDC activities. Overall, the findings point out the importance of UDC in enhancing women's access to digital services while also pointing out significant barriers that need to be addressed to improve service delivery and user satisfaction in these regions.

# CHAPTER TEN

# INTEGRATING MAJOR FINDINGS WITH CONCEPTUAL FRAMEWORK

## 10.0 Introduction

This chapter emphasises that holistic development in the Haor region depends on the advancement of marginalised groups, particularly women, in these communities. This study aims to explore dissemination strategies for digital services offered by unions, determine the specific types of digital services that women are seeking, evaluate the effects of these services on women's education and employment in haor regions, clarify any gender disparities in accessing services provided by UDC, and pinpoint the significant issues and socio-economic challenges that women may face while utilising these services. The researcher used mixed methodologies, including questionnaire surveys, in-depth interviews, and focus group discussions. This chapter aims to integrate the study's findings with the existing conceptual framework and the outcomes from previous literature. This chapter presents the updated research objectives and enquiries, along with a concise overview of the principal findings and interpretations derived from the study's outcomes.

## 10.1 Major findings integrate with Conceptual Framework

A conceptual framework has been developed that highlights the triangular relationship between UDC, TAM, and IG. This framework establishes union digital services as an independent variable, while their effect on women is classified as a dependent variable. This study entails the development of a conceptual framework grounded in existing literature and theories, particularly the technology acceptance model and inclusive governance. The ideas of IG, TAM, and UDC are interconnected within a triangular framework that encompasses essential principles of inclusive governance. The principles include effective public service delivery, justice, individual empowerment, good governance, public engagement, and the protection of rights.

The TAM outlines user psychology and identifies behaviours that influence personal choices related to system utilisation. The elements that greatly influence user choices regarding interest in particular services include usefulness, ease of use, attitude towards usage, behavioural intention to utilise, and the actual system in use. Two individuals oversee the

operations of UDC. Entrepreneurs at UDC are selected according to the principles of the PPP model. UDC offers three unique categories of services: government services, information services, and commercial services. In this instance, UDC employed information and communication technology. UDC has formed a connection with TAM by utilising this technology. UDC was founded through a collaborative model that involves both public and private sectors working together.

The PPP model facilitated public involvement in the establishment of UDC. The government seeks to establish governance that is inclusive for all members of the population. In this context, UDC signifies a notable progress in the delivery of public services at the grassroots level. Furthermore, UDC aligns with TAM and IG. The sustainability of UDC relies heavily on the adoption of effective governance practices. UDC presents a chance to promote inclusive governance. The external TAM variables have a significant impact on the sustainability of UDC.

### 10.1.1 Modes of dissemination of union digital services in haor regions

This investigation aims to explore the question: What dissemination strategies are utilised by UDC for delivering union digital services in haor regions? The study aimed to outline the dissemination strategies employed by UDC in delivering union digital services within haor regions in response to that inquiry. This investigation examined the approaches employed to deliver digital services in the Haor region. The study employed quantitative data to pinpoint four unique approaches for delivering union digital services: paper-based, verbal, email, and mobile phones. Table 45 indicates that the predominant method of dissemination is through paper-based methods. Of the total respondents, 70.56% participated, with 73.7% identifying as female (Table 45).

The qualitative data investigates a distinctive approach. The findings suggest that in certain exceptional situations, individuals requesting services have approached UDC entrepreneurs for remittances, old-age allowances, and a compilation of VGD and VGF cards. In these situations, entrepreneurs took the initiative to visit the residences of their valued clients, ensuring they received the necessary assistance. UDCs employ a door-to-door or home service delivery approach as a unique strategy to provide their services in targeted areas, as noted by a participant (IDI XXXVI).

This finding is incorporated into the effective delivery of public services, aligning with one of the fundamental principles of inclusive governance, which covers the conceptual framework of the study. Women in the Haor region are accessing digital services via UDC. The majority of Haor women do not possess computer literacy, smartphones, or internet access. In this context, the UDC serves as the sole avenue for women to access digital services. Furthermore, a key principle of IG is the efficient delivery of public services. The method of dissemination plays a crucial role in ensuring efficient public service delivery. Paper-based or face-to-face methods can effectively fulfil the goal of efficient public service delivery, aligning with one of IG's core principles.

### 10.1.2 Effect of union digital services on women's education

This study seeks to address the inquiry: Is there any effect of union digital services on women's education and employment in haor regions? In response to that question, the study established an objective to explore the effect of union digital services on women's education and employment in haor regions. The UDC serves as a comprehensive service centre at UP. For large populations, the UDC acts as a central source of information. Therefore, the services provided by UDC have significantly reduced the stress that women face when seeking education-related services in the Haor area. In the past, the education rate in the Haor region was very low. The absence of a school and sufficient teachers contributed to this situation. Poverty was also a significant contributing factor. Furthermore, the villagers, who have a strong connection with the district town, only allowed their children to go to government schools and colleges. Following the establishment of digital Bangladesh, the government streamlined the education system. As a result, access to information is free, allowing people to enjoy their lives and livelihoods. Without education, individuals may not be able to make significant changes in their lives. To achieve this goal, the government created a union digital centre at the rural level to provide IT-based services. The union digital centre now offers a variety of education services. The UDC offers a wide range of education-related services, including online applications for birth certificates; admission to public and private schools, colleges, and universities; online registration for board examinations; enquiries about public examination results; applications to withdraw transcripts or grade sheets; certificates; online applications for government scholarships or stipends; and the receipt of stipends and cash outs. Additionally, UDC has significantly contributed to the spread of computer literacy by providing instruction and training to youth in haor areas.The

quantitative data indicates UDC promotes education and literacy in haor areas. The majority of respondents (38.06%) moderately agreed with this statement. Among them, 41.7% of the respondents were female (Table 56). This indicates that UDC has successfully facilitated the enhancement of education for women and girls in haor areas. In this circumstance, UDC served in many ways, such as raising awareness for women's education, providing online access for application of admission tests, online registration for schools and colleges, withdrawing academic transcripts, receiving scholarships or stipends, and delivering public examination results.

The qualitative findings suggested that about 15 to 20 per cent of women and girls' enrolment in higher education increased over the past 14 years in haor areas. The data show that the UDC is bolstering education and promoting digital technology literacy by offering online educational services to women residing in the Haor region. These services include access to public examination results, university admissions, and applications for esteemed schools, colleges, and medical colleges. Despite the lack of widespread knowledge, progress is being made, but more efforts are required, according to a government official (IDI VII). The people's representatives added that UDCs have greatly enhanced women's and girls' educational attainment by providing education-related services, thereby increasing awareness and literacy rates. While some proponents argue that the expansion of online admission and registration has made a significant contribution, the UP-Chairman notes that its impact is limited (IDI VIII). One of the civil society members also said that UDC facilitates women's and girls' education by granting them access to schools and universities, indirectly fostering educational opportunities. Nevertheless, further endeavours are required to increase consciousness and improve women's education (IDI IX).

The Women Affairs Officer stated that the union digital centre facilitates female education in the haor area by offering services such as assistance with form submission, admission applications, and result checking. However, the effect is limited because there are no free services available (IDI XI). In fact, UDC promotes guardians and female students to advance their education by improving access to educational services in their communities. Besides. Women and girls are motivated to pursue education for being entrepreneurs at the UDC. UDC mandates particular educational credentials for its female entrepreneurs. In this circumstance, women's education is progressing via UDC. To put it another way, UDC is raising local community awareness of women's and girls' education. Hence, it is clear that

the UDC advocates for women's education in haor regions. Last but not least, UDC entrepreneurs mentioned that the educational institutions in the Haor area have achieved significant advancements, with a particular focus on empowering women. UDC offers online access to academic transcripts, results verification, and assistance for non-governmental organisations (NGOs). Mobile banking supports scholarships, and UDC services have a significant impact on women's and girls' education (IDI X).

These findings may relate to protecting rights, good governance, and providing public services effectively, which are the main ideas of IG in the study's framework. UDC serves as a service delivery agent through which women and girls obtain education-related services, including admission test applications, online registration, requests for academic transcript withdrawals, and access to academic literature and resources, thereby positively impacting women's education in haor regions. UDC guarantees these services through the use of ICT. At the same time, the performance of UDC is contingent upon the establishment of effective governance. Additionally, education is a fundamental entitlement for citizens. The government founded the UDC to provide educational services for women in haor regions. Consequently, UDC, IG, and TAM play a crucial role in promoting education in the Haor area as components of the conceptual framework.

### 10.1.3 Effect of union digital services on women's employment

The quantitative data indicated that UDC presents an opportunity to enhance women's employment in haor regions. A significant portion of respondents (38.47%) expressed strong agreement with this statement. Of the total respondents, 40% identified as female (Table 57). UDC creates a job opportunity, specifically for two entrepreneurs. Furthermore, entrepreneurs have the option to designate one or more assistant entrepreneurs, contingent upon the earning capacity and performance of the UDC. Additionally, UDC offers skill development programmes aimed at enhancing livelihoods. UDC assists aspiring youth in submitting applications for dairy and cattle farming training organised by the Upazila's livestock department, as well as for skill development training provided by the Upazila's youth development offices.

The qualitative data reveals that various stakeholders, such as government officials, women's affairs officers, representatives of the people, members of civil society, and UDC

entrepreneurs, played a role in the gathering of qualitative data. There is a consensus that UDC is creating avenues for women to engage in employment within the local communities. The government representative indicated that the Women's Affairs Office and Social Services are enhancing employment rates and preparing women for diverse professions through career options, training programmes, job creation, assessments of job security, e-commerce initiatives, ICT training, and life-skills development (IDI XVI). WAO indicates that although there is a rise in women's employment within union digital centres, the extent of this employment remains constrained. While they have their constraints, UDCs offer ICT training and relevant work-related information to support women in seeking entrepreneurial opportunities and job applications (IDI XX). In a similar vein, the UP chairman noted that the UDC supports women in securing sewing machines from the Union Parishad, promotes their development of digital technology skills, and offers them entrepreneurial opportunities (IDI XVII).

Similarly, UDC entrepreneurs noted that the union's digital centre promotes women's employment by providing a range of life skills training programmes, such as computer training, English language instruction, access to sewing machines, and job training. Women entrepreneurs constitute 30 per cent of the UDC workforce (IDI XIX). Nonetheless, an individual from the civil society has articulated differing perspectives. He stated that the union digital centres in the haor area do not offer sufficient support for women's employment and have a restricted range of services. A considerable proportion of educated young women in rural regions are currently without employment, indicating an opportunity for the establishment of a novel framework for female entrepreneurship. Although training courses might be available, there is no guarantee of securing suitable employment (IDI XVIII).

The report highlights the necessity for the government to tackle women's unemployment to enhance the current situation through the establishment of sufficient employment opportunities. UDC is a program aimed at assisting women who have worked in haor regions. In other words, female entrepreneurs and their supporting partners demonstrate achievement. Furthermore, UDC offers an array of training programmes, including computer skills, ICT, English language proficiency, and sewing machine operation. UDC is providing financial services through an agent banking system. As a result, women in haor regions utilised microcredit via the banking system, supported by UDC. Additionally, UDC aids women and girls in obtaining job opportunities in outsourcing, freelancing, and e-commerce. The UDC in

haor regions increases prospects for overseas employment. The findings point to empowering citizens, ensuring the effective delivery of public services, and adhering to the fundamental principles of good governance as vital components of IG.

Additionally, it encompasses PPP and ICT as essential components of UDC. TAM is associated with ICT. UDC offers skill development training designed to empower women and girls in haor regions, providing them with the necessary tools to generate their employment opportunities. Effective delivery of services can accomplish these objectives. The effectiveness of the UDC and the government's representation acts as measures of governance quality, highlighting both positive and negative elements. Should UDC uphold good governance in its service delivery, it stands to attain the anticipated outcomes. Consequently, it is crucial for generating employment prospects in the haor region. UDC also provides a variety of career pathways. Various entrepreneurs have the potential to become involved in haor regions. The inclusion of a female entrepreneur is essential.

Consequently, women entrepreneurs were designated to assist the haor inhabitants. This opportunity subsequently improves their financial capabilities. This initiative has enabled women to assume control over decisions in both home and work environments. Furthermore, UDC used ICT for a range of applications. An initiative involves a training programme focused on livelihoods. The objective of the training programme is to foster job creation. UDC is diligently working to generate job opportunities for women in haor regions while also fostering potential employment methods for women in these areas. The findings clearly indicate a significant connection between the establishment of women's employment and the conceptual framework of the research.

### 10.1.4 The effect of union digital services on women in the haor regions

The data indicates that according to cross-tab analysis based on the user’s perception, the UDC-provided services have an effect on women covering the different selected areas. Regarding easy access to UDC-provided services, a significant number of respondents (43.06%) moderately agreed with the statement relating to easy access to government, information, and commercial services (Table 52). Among all respondents, 44.3% were female. The female users thought that UDC made it possible. Prior to the start of the UDC

project, gaining access had proven difficult. In this case, they had to visit UNO and DC offices for getting such services, which was costly.

Similarly, the majority of respondents (41.11%) believe that access to government, information, and commercial services has moderately improved for women because of the commencement of the UDC project. Among all the respondents who provided this feedback, 43.9% were female (Table 53). After the UDC project is established, increase health information and telemedicine services. The majority of respondents (37.36%) moderately agreed with this statement. Among the respondents, 38.8% were females (Table 54). Comparing the pre-digital era to the present, Haor women have greater access to information and services. Therefore, the UDC project's implementation has made it easier for haor women to access information and services at their doorstep.

These findings align with the IG's principle of ensuring rights, which forms the conceptual framework of the study. Once again, ICT plays a significant role in UDC's delivery of digital services to haor women. ICT can also be connected to the Technology Acceptance Model (TAM), which describes users' behaviour regarding their acceptance or rejection of ICT in haor areas.The study reveals that 38.47% of respondents highly agreed with the statement regarding the spread of computer literacy. Among all respondents, 40.0% were women (Table 55). They are aware of computers and the internet in the Haor area due to the introduction of UDC. Moreover, UDC is providing a training programme on computer operating systems. Subsequently, UDC has made a significant contribution to spreading computer literacy in their locality. This finding may be connected to the principles of IG, which focus on engaging citizens and empowering individuals within the conceptual framework. Moreover, computer literacy is a must requirement for UDC entrepreneurs who serve to haor women.

According to Table 56, the majority of the respondents (38.06%) moderately agreed with the statement as promotion of education and literacy. Among all respondents, 41.7% were female (Table 56). UDC users thought that UDC was a knowledge or information hub. Whatever they need, they can get it from there. Additionally, users can search for educational materials and resources using UDC. This finding may be related to the ICT as one of the basic components of UDC. ICT is covering the conceptual framework in this study. According to Table 58, there is moderate agreement (49.03%) with the statement regarding the increase in

women’s participation in the decision-making processes of household and local government institutions. 52% of the respondents were female (Table 58). The UDC users thought that women's awareness has increased through UDC. As a result, women can advocate for their rights more effectively. UDC can assist them in providing the information they need in this situation. This finding is related to engaging citizens and empowering individuals; it covers the conceptual framework. UDC is operating two entrepreneurs who were appointed following the public-private partnership model, which may be interconnected between IG and UDC.

According to the survey respondents (Table 57), a majority (38.47%) expressed high agreement with the statement regarding improvements in women's employment. 40.0% of the respondents were women (Table 57). UDC is itself a centre where at least two entrepreneurs can work. Based on the performance and income of the UDC, they can appoint assistant UDC entrepreneurs as per the demand of the UDC. In addition, UDC provides a training programme for skill development, which helps young people create employment opportunities. This finding may relate to PPP and ICT as core elements of UDC. Again, these two are also connected with the conceptual framework as a core part of UDC.

### 10.1.5 Nature of union digital services sought by women in haor regions

This study aims to investigate the question: What types of digital services are women seeking from union digital centres? The study aimed to determine the characteristics of union digital services requested by women in haor regions in response to that inquiry. The quantitative findings suggested that women in haor areas primarily sought various services. Among them, the most significant government services are the VGD/VGF card list; 64.6% of the respondents were female. The next significant service is various government allowances, which 59.3% of the respondents indicated were for females. The next crucial service is the birth, death, and citizenship certificates, which 58.3% of the respondents indicated were for females (Table 59). Haor women are going to visit UDC to receive birth, death, and citizenship certificates. Some government benefits and services, like school enrolment or obtaining a national ID, require these certificates. Similarly, most of the females who live in the haor area are struggling with financial hardship or poverty. Therefore, they were looking for the VGD or VGF card list. Who does the VGD/VGF database include? Those women will get benefits like rice, wheat or daily goods from the government. Various government

allowances indicate maternity, widow, old-age, and disabled allowances. Women frequently visit the UDC to receive government allowances. Among livelihood or information services, the most significant are health services, where 60.1% of the respondents were women. Usually, health facilities are divided into divisions, districts, and thana-level hospitals. At the union level, there is not a doctor or consultant. Women in the Haor region had to depend on the community clinic. However, due to the digital transformation of health services, doctors and consultants are now available on online platforms. For this reason, women had to visit UDC for a doctor or consultant list and contact numbers.

Then, education/admission tests, form fill-ups, and public examination results were the second most popular services; 52.2% of the respondents were female. After the digital transformation of the education sector, students are receiving public examination results, like the centre examination for primary students, SSC, and HSC final examinations. An online platform also publishes results of university admission tests. Moreover, students have to fill out their registration form at the secondary and higher secondary levels. The next most popular service was the download of government forms, with 51% of the respondents identifying as female. Government offices disseminate their circulars through both print media and their websites. Interested candidates have to collect the required form from the relevant websites. Lastly, Table 60 identified tourism as a significant service, with 50% of the respondents being female. Those who aspire to travel to any part of the nation or overseas can do so. They can collect their necessary information from the UDC. Among commercial services, the most popular service is computer/ICT/English language proficiency training; 61% of the respondents were female. In the digital era, computer and ICT skills are crucial for future employment opportunities, while English language proficiency is essential for improved understanding and communication.

The next most popular service is data entry, with 58.4% of the respondents being female. It's a temporary job when a census or survey needs data entry personnel, then potential women can join there. In return, women can earn some money. Then, industry and commerce services are the most popular services; 56.6% of the respondents were female. Various owners of small and cottage industries visited UDC to obtain the services they expected. The next most popular service is printing and photocopying, with 56.3% of the respondents being female. UDC is equipped with photocopying and printing machines. As a result, those who need photocopying and printing in the villages – then women can receive these services from

the UDC. Students and educational institutions, in particular, frequently use this service. The next popular service is scanning and laminating; 55.6% of the respondents were female. The UDC users went to the centre to have their important documents scanned and laminated. Photography is also a popular service among Haor women; 54.4% of the respondents were female. Female students need to capture passport photos for their academic and other purposes. The next popular service is insurance services; 53.7% of the respondents were female. 52.8% of the respondents were female, and the most popular services were internet browsing and email. UDC offers an email and internet browsing service that requires a minimum charge. As a result, it became popular among those who have children living abroad.

The following popular service is e-tickets for air, buses, and trains; 51.4% of the respondents were female. The residents of the haor area have to walk a long way to get to the bus and train. Moreover, air service is generally available in the division or old district in the country. It was very difficult to buy a ticket for air, bus, and train. After the commencement of the online ticketing system, Hoar residents, especially women, can purchase or book tickets for air, bus, and train at their doorsteps. Another popular commercial service is CV and job applications, where 49.1% of the respondents were women (Table 61). Graduates who live in haor regions are actively seeking job opportunities. After commencement of the UDC project, eligible candidates can apply for the job with the assistance of UDC.

The qualitative findings indicate that women in the Haor region were actively seeking various services from the UDCs. The UDCs offer a range of services, such as government services, information services, livelihood and skills development services, health services, private services, social safety net services, and disaster management services. The government provides several services, such as birth and death registration, application for National Identification (NID), testimony from the UP chairman, citizen certificates, and character certifications. The information services include information pertaining to agriculture and employment. The private services offered include photocopying, photography, laminating, mobile banking, email, computer composition, and government circular printing. The education services include an online application for obtaining an equivalent certificate, the correction of a student's name and age, the withdrawal of a certificate, transcripts, registration cards, and entrance cards. The livelihood and skills development training programme comprises computer operation, sewing machine operation, and empowerment training. The

health services provided include telemedicine, medical visa application assistance, consultations with physicians or consultants, registration for the COVID-19 vaccine, information about child vaccinations, and access to Daktarbari websites.

The social safety net services include a range of benefits, such as VGD and VGF cards, maternity allowances, allowances for widows, the elderly, financially poor disabled individuals, and microcredit. In the event of flooding, the disaster management services include provisions for relief, OMS cards, and shelter. These findings may be connected to the principles of engaging citizens, efficient public service delivery, good governance, and empowering individuals within the conceptual framework of the study. These findings also demonstrate citizen engagement, as women frequently seek those services. Similarly, users could not be encouraged if the service delivery system is not efficient. This finding indicates efficient public service delivery. Again, good governance also creates images by which reputation is built for an organisation. English has a proverb, 'information is power', which empowers an individual. With this information and these services, women are empowering themselves. Justice is automatically guaranteed when everything is proceeding in accordance with the law. Therefore, all principles of IG and the services provided by UDC that women desire are strongly related to the conceptual framework.

### 10.1.6 Gender equality in delivery services – users' perceptions

This research aims to investigate the issue of potential prejudice against female users seeking services at UDC. The study sought to examine the presence of gender disparities in the provision of UDC services in haor areas in answer to that question. The quantitative data indicated that a majority of respondents (91.94%) in the Haor region perceive that all individuals have equitable access to services provided by the UDC, particularly when the service delivery originates from the UDC. Table 62 indicates that 93.00% of the respondents were female.

The qualitative data suggests that gender equality in the use of delivery services is dependent on the representative overseeing the UDC. UDC functions under the direct oversight and direction of the UP chairman. If the UP chairman is actively involved, UDC offers support to individuals irrespective of gender identity" (IDI-XXXI). Women entrepreneurs have specific challenges when operating at the UDC. A participant stated that female entrepreneurs have

several hurdles in delivering union digital services. The identified challenges include illiteracy, limited awareness of digital technology, connectivity issues, geographical distances, inadequate communication infrastructure, discourteous behaviour from service seekers and male users, unreliable electricity supply, and restricted earning opportunities" (IDI XXXIII). Consequently, female entrepreneurs may encounter uncomfortable conduct from their clientele. Gender equality signifies that disparities in service provision based on gender are minimal. The research indicated an absence of gender discrimination in service delivery, implying that UDC entrepreneurs offer services to all individuals impartially. There may occasionally be a bias towards providing services to women rather than men. Two entrepreneurs, one male and one female, are managing UDCs. To enhance women's engagement, the pertinent field administrations, at both the upazila and district levels, engaged local women entrepreneurs at UDCs, considering the recommendation of the UP chairman. In the research region, one entrepreneur managed the UDCs, despite their scarcity. The social framework persists in sustaining gender-based inequality. The union digital centres offer career opportunities for young girls and women in the local community. These facilities provide essential skills, such as computer instruction and sewing machine operation, which bolster the business confidence of rural women.

Consequently, all individuals, including men, women, and individuals with disabilities, are gaining access to union digital services. It also guarantees social integration. Inclusion embodies the essence of IG. UDC offers its services at a fair price, which guarantees fairness. Justice is considered a fundamental value of IG. UDC fundamentally delivers both public and private services, with a predominant focus on governmental services at the grassroots level. Local entrepreneurs, who are more accountable and attentive to the community, operate UDCs. The objectives and understanding of inclusive governance are closely linked, enhancing the research. Moreover, technology possesses the capability to eradicate inconsistencies inside any system. Consequently, ICT may enable UDC to deliver services to the community irrespective of gender identification. Similarly, efficient public service delivery may facilitate equitable access to digital services for all, an important principle of inclusive governance. From this viewpoint, it may have a positive correlation with the study's conceptual framework.

### 10.1.7 Major problem and challenges faced by women and UDC in haor areas

This study aims to analyse the significant challenges and socioeconomic barriers that women may face when accessing services. The aim of the research was to discern the fundamental issues and socio-economic obstacles faced by women, where relevant, in the process of receiving services. The qualitative data indicated that numerous challenges were encountered by both women and UDC in haor regions. The challenges identified include poor communication systems, the effects of natural disasters, not having enough money, the need for a UDC close to the village market, worries about social security, cases of sexual harassment, lack of proper sanitation for women, the need for better connections with elected officials, the common problem of early marriage, health issues, difficulties due to not having enough capital, low income, few training opportunities, poor performance reviews, limits on work activities, little family support, job insecurity, the need for better job opportunities, and misunderstandings of religious rules. The obstacles associated with UDC encompass the absence of well-defined regulations and policies for its management, the lack of specific criteria for selecting entrepreneurs, a deficiency of skilled female entrepreneurs, inadequate physical infrastructure, a limited understanding of ICT among elected officials, the predominance of male entrepreneurs, sluggish internet connectivity, insufficient electricity supply, political meddling, a general lack of comprehension regarding UDC, underutilisation of digital tools, challenges faced by the UNO office in overseeing UDC, and coordination issues for the DC office in managing UDC initiatives. Women related challenges happened due to lack of awareness of women's rights, and social constructions. For women development, the government and society have to take necessary steps in this regard. Similarly, UDC related challenges happened due to lack of proper monitoring of the authority, insufficient logistic support from the UP. In this case, government should take proper steps as required by the UDCs in haor areas.

The identified challenges may also be associated with the conceptual framework. UDC constitutes a fundamental component of this architecture. Simultaneously, the research uncovers some substantial obstacles. UDC does not live up to user expectations as a result. These problems can occasionally be linked to ICT. The conceptual framework depicts ICT as an integral component. However, infrastructure is essential for deriving benefits from the use of ICT. A sluggish internet connection is a primary obstacle to maximising the advantages or results of ICT. The implementation of TAM may serve as an evaluation tool for ICT use.

Moreover, the assurance of rights may inversely correlate with the problems faced by women. It constitutes an important obstacle to the safeguarding of rights. Women encounter several problems in the examined domains, which may be evaluated using the fundamental principles of effective governance. GG constitutes a crucial element of the conceptual framework. From the perspective of good governance, challenges faced by women and UDC would be the main barrier to attaining the objective of the UDC project as well as community empowerment, including women as an underserved group. Furthermore, women's challenges may be evaluated through the justice as principles of inclusive governance within the conceptual framework of the study.

### 10.2 The comprehensive overview of the research

At a glance, the figure shows the different steps of the study. The following graphic delineates the extensive results of the investigation.

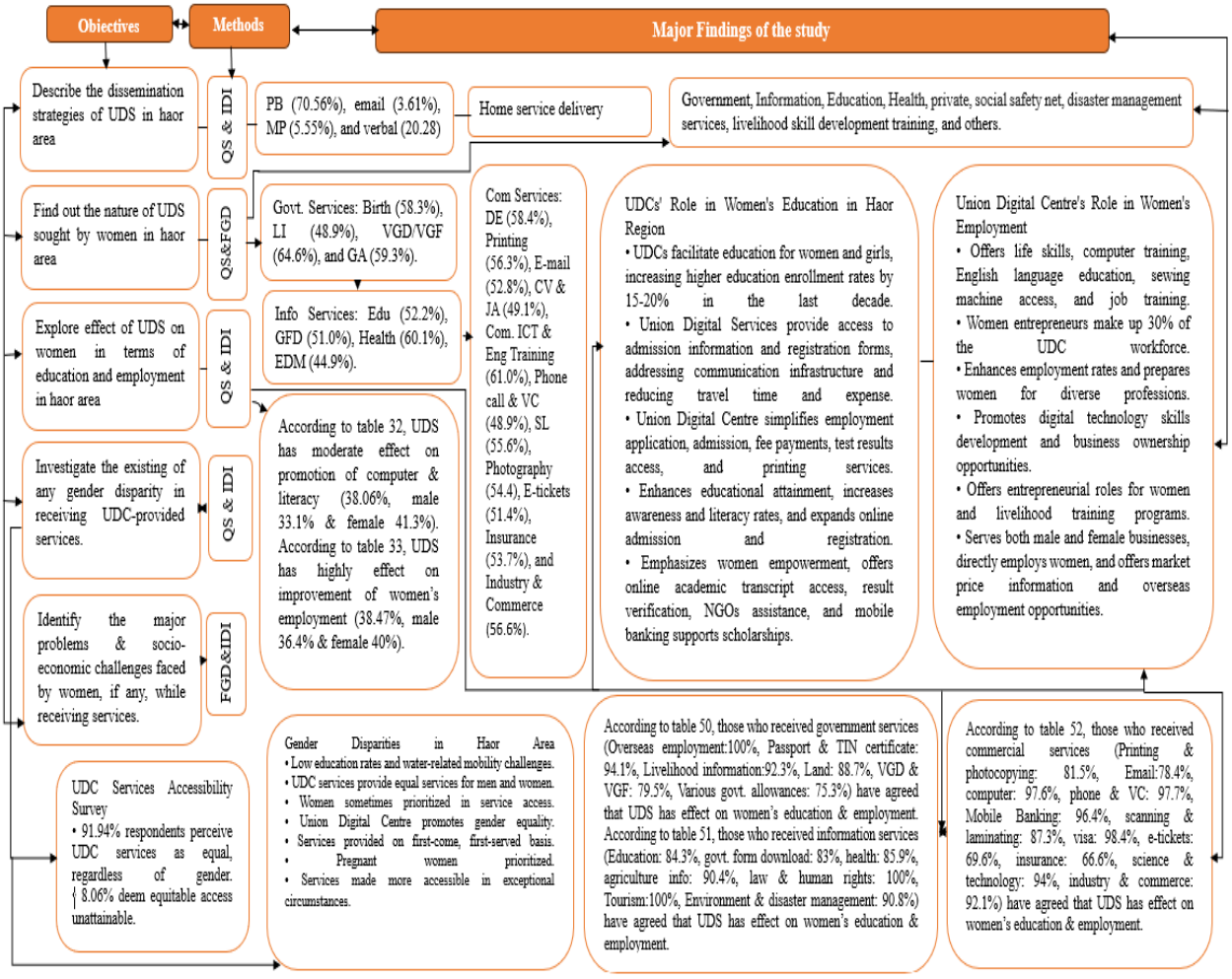


Figure 15: The comprehensive overview of the research

### 10.3 Summary of the chapter

This chapter discusses the connection between the findings of the study and the research questions and objectives, as well as the consistency of the conceptual framework with previous findings. The focus of the discussion is the dissemination methods of union digital services in haor areas. The findings of the study indicate that the methods of dissemination include paper-based communication, verbal communication, phone calls, email, and home delivery services. The subsequent focus of the study was on the traits of digital services that women in haor regions seek. The quantitative data revealed that government information and commercial services, especially birth and death certificates, livelihood information, lists of VGD/VGF cards, government form downloads, printing, email, CV and job applications, and computer training, are of substantial importance. The qualitative data highlights the most important services, including education-related services, health services, applications for NID, testimony from the UP chairman, social safety net services (specifically maternity allowances, allowances for widows, elderly individuals, and disabled individuals), microcredit, and relief.

The effect of union digital services on women's education and employment is investigated. Analysis of the data reveals that, in the last ten years, around 15 to 20 per cent of women in haor regions have shown an increase in literacy rates. Furthermore, women make up 30% of the workforce at the UDC in the Haor region. The quantitative analysis revealed that 91.94% of the respondents in the Haor region perceive union digital services as having equal accessibility. The analysis highlights various significant obstacles encountered by women entrepreneurs, alongside UDC. The findings indicated that significant obstacles include sexual harassment, health-related issues, early marriage, low income, job insecurity, poor internet connectivity, political interference, and inadequate electricity supply. Through the triangulation of qualitative and quantitative data, UDCs have shown sustainability for around 14 years, beginning in 2010. The findings suggest that the services offered by UDC enhance the daily lives of individuals in rural communities and facilitate their access to government resources, information, and commercial services, particularly focusing on women in these areas. The government has effectively forged links with underserved populations via the

UDC initiative. Ultimately, the UDC highlights the importance of empowering community members, engaging the masses, and ensuring equality for everyone.

# CHAPTER ELEVEN

# SUMMARY OF FINDINGS AND CONCLUSION

## 11.0 Introduction

This chapter basically focuses on the results or conclusions derived from the investigation. The research is partitioned into several domains that are closely linked to the primary and particular goals of the investigation. The study's findings and discussion demonstrate that the research bases its decisions on actual evidence. This section presents a series of deductions and explains them in a systematic manner. The research also identified significant recommendations from the key stakeholders at UDC about how UDC may enhance its service dissemination or delivery methods to address current difficulties and enhance the quality of its service delivery. Likewise, women entrepreneurs from UDC have encountered significant challenges and are seeking ways to reduce these problems based on empirical research. Furthermore, future academics and policymakers may get practical insights into the implementation of digital services through UDC and its effect on women in the Haor region. Moreover, the situation presents an opportunity for the government to implement essential reforms that would enable the UDC to fulfil the aspirations of the local community and empower women in the Haor region to participate on an equal footing with men.

## 11.1 Summary of the findings

### 11.1.1 Dissemination strategies of UDC services in haor areas

The research started with the aim of achieving a specific purpose, namely to precisely describe the methods used to spread awareness about UDC services in the Haor region. This research uncovers four distribution tactics used by union digital centres: paper-based, verbal, mobile phone, and email. The majority of female respondents, accounting for 73.7%, and male respondents, accounting for 66.2%, said that the method of UDC service delivery is mostly paper-based. The verbal approach is the next widely used method for disseminating UDC services, with a participation rate of 20.2% for females and 20.3% for males. The third popular method of distributing UDC services is via mobile phones, with a use rate of 3.6% among females and 8.2% among males. Email is the least preferred method of distributing UDC services, with a use rate of 2.4% among females and 5.2% among males. The paper-

based method was the most often used distribution technique, while email was the least preferred means of UDC service delivery in the Haor area of the country. In addition, qualitative data also reveals a unique method of distribution called home service delivery or door-to-door service. Another method of distributing UDC services in the Haor region is home service delivery. Occasionally, it occurs sporadically. The questionnaire survey indicates that UDC users in the Haor area have a moderate level of satisfaction with the internet speed (37.8%, female: 42.2% and male: 31.8%), available equipment (42.6%, female: 44.8% and male: 39.7%), electricity supply (25%, female: 29.9% and male: 26.6%), entrepreneur's skill (48.5%, female: 52.0% and male: 43.6%), and overall service delivery of UDC (58.9%, female: 62.7% and male: 53.8%).

However, the entrepreneur's behaviour was extraordinary—highly satisfying for 29.8% of individuals, with 39.8% being female and 34.1% being male. This research aimed to ascertain the perspectives of UDC users regarding various aspects of the advantages experienced by rural people. The study revealed that the majority of UDC customers express high levels of satisfaction with the services provided by the UDC. Specifically, individuals appreciate the ease of accessing government, commercial, and information services (43.1%, with 41.3% of men and 44.3% of women). They also value improved access to information services for women (41.1%, with 37.4% of men and 43.9% of women). Furthermore, the growth of health information and telemedicine is seen as beneficial (37.4%, with 35.4% of men and 38.8% of women). Additionally, it is recognised that digital technology aids in education and literacy (38%, with 33.1% of men and 41.7% of women). Lastly, it contributes to the increased involvement of women in decision-making processes within households and local government institutions (49%, with 44.9% of men and 52.0% of women). However, the efforts to promote computer literacy (38.5%, male: 36.4% and female: 40.0%) and increase employment among young women (38.5%, male: 36.4% and female: 40.0%) were rather remarkable, suggesting a high degree of satisfaction.

### 11.1.2 The nature of union digital services sought by women in the Haor areas

The subsequent precise aim was to ascertain the kind or accessibility of digital services provided by unions that women in the Haor region were seeking. Based on that investigation, questionnaire survey reveals that different union digital services, particularly government services (birth, death, citizen certificate, overseas employment, passport, TIN certificate,

livelihood information, land, VGD and VGF card database, trade license, land recording, and various government allowances), information services (education including admission test, form download, and public examination result, government forms download, health information and telemedicine, agriculture information, law and human rights, tourism, and environment and disaster management), and commercial services (typing or census data entry, printing and photocopying, email and internet browsing, CV and job application, computer, ICT, English language proficiency training, phone and video conferencing, mobile banking and banking services, scanning and laminating, photography, online visa application, e-tickets for air, bus and rail, insurance services, science and technology, industry and commerce services) in haor region. The most popular digital services among women in the Haor area include education (52.2%), government form download (51%), obtaining birth, death, and citizen certificates (58.3%), accessing health information and telemedicine services (60.1%), receiving livelihood information (48.9%), accessing the list of VGD and VGF cards (64.6%), data entry and typing services (58.4%), printing and photocopying (56.3%), email and internet browsing (52.8%), scanning and laminating (55.6%), photography (54.4%), purchasing e-tickets for air, bus, and train travel (51.4%), accessing various government allowances (59.3%), insurance services (53.7%), and industry and commerce services (56.6%).

The qualitative data reveals important services sought by female UDC users in the haor regions. These categories include government services, information-related services, services offered by commercial entities, educational services, training programmes aimed at improving livelihood and skills, healthcare services, social welfare services, and disaster management services. Government services include many administrative functions, such as birth registration, issuance of death certificates, processing applications for national identification cards (NID), obtaining testimony from the UP chairman, issuing citizen certificates, and providing character certifications. Similarly, information services include the provision of agricultural and employment-related information. The private services offered include photocopying, photography, laminating, mobile banking, email services, computer composition, and government circular printing. The education services provided include many features, such as an online application for obtaining an equivalent certificate, the ability to change a student's name and age, the option to withdraw a certificate, access to transcripts, a registration card, and admission cards. Public exams include certification at the secondary

school (SSC) and higher secondary school (HSC) levels. The livelihood and skill development programme includes training in computer operation, sewing machine operation, and empowerment. The range of healthcare services offered includes telemedicine, medical visa applications, consultations with doctors or specialists, registration for the COVID-19 vaccine, information on child immunisations, and access to Daktarbari, a digital health service platform. The social safety net's services include many programmes, such as vulnerable group development (VGD), vulnerable group feeding (VGF), a maternity allowance scheme for those living in poverty, an elderly allowance, allowances for widows, and allowances for financially disadvantaged individuals with disabilities. Disaster management services include OMS (open market sales), relief aid, and shelter assistance tailored specifically for flood situations.

### 11.1.3 The effect of union digital services on women in terms of education and employment in haor areas

Based on user feedback, the study indicates that union digital services have moderate effects on several sectors. Among the respondents in a row, Table 52 reveals that a substantial percentage of respondents (41.3% male and 44.3% female) hold the belief that UDS has a moderate effect on women's convenient access to information and services. In various ways, UDS has had moderate effects on women. It has improved access to health information, telemedicine, and services, with 35.4% of men and 38.8% of women benefiting (Table 54). UDS has a moderate effect on the advancement of education and literacy, benefiting 33.1% of men and 41.7% of women (Table 56).

Additionally, UDS has increased women's participation in decision-making processes within households and local government institutions, with 44.9% of men and 52.0% of women experiencing this improvement (Table 58). The UDS had a significant impact on the spread of computer literacy and women's employment growth. Among the respondents in a row, Table 55 reveals that UDS has had a high effect on spreading computer literacy among rural women, with rates of 36.4% for males and 40.0% for females (Table 55). Furthermore, UDS had a significant impact on improving women's employment, with 36.4% for males and 40.0% for females (Table 57). The results of the binary logistic regression indicate that the research identifies three significant variables that considerably impacted women's education and employment status in the Haor region. The presence of a passport and TIN (tax)

certificate is associated with 0.328 times decrease in the probability of success in women's education and work status compared to those who do not receive these services. Compared to those who do not use the livelihood information predictor, there is 0.226 times decrease in the chance of success for women's education and work status. Finally, government allowances significantly increase the probability of success in women's education and employment by 3.555 times compared to those who do not receive them. The second predictor, agricultural information, is associated with a 0.489-times decrease in the chance of success for women's education and employment compared to those who do not have it. The third factor, the use of printing and photocopying services, has a 2.103 times higher effect on women's educational achievement and employment status compared to those who do not use these services. Mobile banking, as the fourth predictor, has a lower probability of impacting women's educational and employment status. The implementation of electronic tickets for air, rail, and bus transportation, the fifth factor, strongly correlates with increased levels of women's education and employment in the Haor area.

According to qualitative data, UDC in Bangladesh has had a significant impact on female education by serving as a centre for digital innovation and providing access to information at both public and private school and colleges. As a result, there has been an increase in higher education enrolment rates in the Haor region. The UDC also provides extensive government information, allowing citizens to exercise their rights and take advantage of possibilities. It offers online educational services to women in the Haor area, improving the standard of education. Union digital services have had a substantial effect on women's education in the haor area by providing them access to admission information, downloadable registration forms, and a thorough comprehension of the application process. The government's implementation of policies like providing complimentary textbooks and cash stipends for female students, together with enacting laws that prevent child marriage, effectively encourages and supports the education of girls. The UDC has an indirect impact on women's education by imparting information about education's significance.

However, the study must have continued to make additional efforts to raise awareness and improve women's education. Education institutions in the Haor area have made significant progress by prioritising women through online access to academic transcripts and the cooperation of non-governmental organisations. Mobile banking and UDC services have a tremendous impact on women's education because they provide them with access to online

admissions and government stipends. Women are also taking advantage of maternity leave and increasing their involvement in business. UDC has a beneficial influence on women's education in the Haor area. Finally, UDC is a government and privately operated program that provides education information and assists teachers in online registration for Monthly Payment Orders. Students used UDC services to obtain their public examination and admission results, complete registration forms, and submit online applications for educational institutions such as schools, colleges, and universities. This initiative is a significant achievement in empowering rural women, who recognise the importance of women's education for their future. UDC also helps female students obtain government scholarships and stipends, encouraging both students and their parents to persist in their endeavours. In addition, UDC facilitates the implementation of computer-based writing and printing in rural areas, offering schools the required resources for composing, printing, and photocopying. This effort reduces the need for physical applications at district headquarters, allowing schools to access essential services and information in remote locations like Haor. UDC promotes and streamlines the learning experience for women, parents, and educational institutions in distant places, such as Haor.

Besides, the Upazila Women's Affairs Office and Social Services are implementing a range of methods to enhance women's employment, such as conducting training programmes, providing professional development opportunities, and conducting reviews to ensure job stability. In addition, they provide life-skills training to empower young women in the community, equipping them with vital skills and knowledge to pursue a wide range of career opportunities and enhance their employability and qualifications. Insufficient monitoring methods impede women's ability to make a significant effect in the professional realm. Union councils provide sewing machine training, while the UDC assists with registration. Microcredit, stipends, and governmental incentives are crucial in empowering women and enabling them to achieve self-sufficiency. The paper underscores the insufficient support for women's employment at UDCs in Bangladesh, highlighting the limited range of services available. A significant percentage of women with advanced education living in rural areas face a dearth of job opportunities. The UDC entrepreneurs propose an innovative initiative to address this issue, with the goal of improving women's employment prospects or providing support to women starting their businesses. The UDC facilitates women's employment via a range of initiatives and endeavours, such as providing access to sewing machines for lending

and delivering vocational training opportunities. Presently, the proportion of female entrepreneurs in the workforce is around 30%. Nevertheless, the limited participation of women in entrepreneurship significantly reduces the effectiveness of UDC's services in promoting women's employment. Despite the increasing trend of women working at union digital centres, their career options remain limited. UDCs provide information and training in information and communication technology to support women in their efforts to find and apply for entrepreneurial employment. In addition, they make a significant contribution to the establishment of employment opportunities, both through the direct employment of female entrepreneurs and the provision of training programmes to enhance their skills. Furthermore, UDC is a platform for women's employment that has specific and distinctive requirements for female entrepreneurship. In addition, UDC offered life skills training programmes, including computer literacy training, sewing machine operation training, and English language education. As a result, women in the Haor region have actively participated in both private and government offices and received UDC training. Once again, a significant number of individuals are venturing into entrepreneurship, establishing their businesses within their local markets. Trained women performed their jobs in their homes. UDC has indirectly facilitated employment opportunities through overseas employment visa applications, online job applications, job circular dissemination, and e-commerce.

The Haor region can enhance women's education by promoting online learning programmes. The UDC can play a significant role in reducing technological barriers and improving literacy rates and educational awareness. By focusing on the training and benefits offered to women, UDCs can combat poverty, establish employment opportunities, increase social awareness, and provide educational tools and scholarships for female students. Campaigns and social awareness can also help raise awareness about the importance of women's education. Through women's gatherings or yard meetings, UDCs provide various information, such as education-related information and financial aid. They also provide various training programmes and encourage women to educate themselves on the advantages of digital technology. By adopting necessary actions, UDCs can ultimately improve the standard of education for women in the Haor region. UDC services have significantly impacted women in Haor areas by providing them with access to services that are largely in their self-interest. Increased access to ICT has made it easier for women to access these services without seeking aid from other sources or travelling long distances. Women are now more likely to

use these services because they can complete necessary tasks on their own, become independent, and utilise digital services. The UDC programmes have led to greater participation in state affairs and increased confidence among women in the region. However, detailed studies have yet to examine the effects of UDC services on women. They take time, can be expensive or inexpensive, and are straightforward to obtain through governmental services or information. Women are no longer reliant on men to obtain government services; all they need to do is visit UDC and discuss their issue with business owners.

### 11.1.4 Major problems and socio-economic challenges faced by women and UDC

The report delineates two main categories of challenges and barriers faced by women entrepreneurs and UDCs. Women entrepreneurs face numerous challenges, including inadequate communication infrastructure, negative impacts from natural disasters, low income levels, the establishment of UDC in proximity to village markets, barriers to accessing social security, occurrences of sexual harassment, lack of dedicated sanitation facilities for women, uncooperative behaviour from UP chairman and secretary, early marriage customs, health issues, insufficient capital, lack of training opportunities, inadequate performance evaluation systems, workplace command issues, lack of familial support, job insecurity, limited opportunities for improved employment, and misinterpretation of religious and cultural norms. The technical challenges faced by UDCs include the absence of clear guidelines and policies for UDC management and entrepreneur selection, a shortage of skilled female entrepreneurs, insufficient physical spaces, limited understanding of ICT usage among public representatives, entrepreneurs with restricted authority, slow internet connectivity, inadequate electricity supply, political interference, low awareness of UDCs, underutilised digital equipment, and difficulties in coordination and supervision encountered by UNO and DC offices.

### 11.1.5 Gender disparity while delivering UDC-provided services or not

The research aimed to assess the extent of gender inequality in accessing UDC services. According to the quantitative data, 91.94% of the respondents said that there was no gender-based difference in providing services. In contrast, a mere 8.06% of the respondents acknowledged the presence of gender-based inequality at the UDCs in the Haor region, as seen in Table 62. Meanwhile, government authorities in the Haor area attribute gender

discrepancies to women's low education rates and mobility challenges during the flood era, as shown by qualitative data. These gaps persist, despite the efforts made by the UDC to resolve them, emphasising the need for enhanced gender equality. According to the elected official's statement, there is no gender disparity in the provision of UDC services in the Haor region. However, the promotion of knowledge and understanding has led to a decrease in bias. Once again, UDC entrepreneurs maintain that there is no gender gap in providing services to women, despite women being their top concern. The union digital centre, which includes entrepreneurs of both genders, does not exhibit any gender disparities. Women often receive preference due to their discomfort with public speaking or physical activity. Services are generally offered on a first-come, first-served basis, with no special priority extended to pregnant women. This method guarantees parity and comprehensiveness for everyone, irrespective of their gender. In contrast, representatives from civil society have expressed varying viewpoints, stating that women make up the majority of users at the union digital centre in the Haor area, indicating a lack of bias. On the other hand, the union digital centre in the Haor area accords greater significance to males due to their increased mobility and powers of observation. A female participant highlights the existence of a gender disparity stemming from the devaluation of certain women.

### 11.2 Implications of the findings

This study may assist policymakers and stakeholders in taking essential changes to enhance user satisfaction in the haor areas of Bangladesh, based on empirical data. Consequently, UDC entrepreneurs, local administration, and the ICT division must implement measures to enhance internet speed, supply essential equipment to the UDC, guarantee continuous electricity, elevate the skills of UDC entrepreneurs, and improve the overall efficiency of service delivery in haor regions. Local authorities might similarly motivate UDC entrepreneurs to enhance their behaviour while processing client applications. The relevant theories, including inclusive governance and the technology acceptance model, provide basic knowledge to explain the study's findings. This study offers empirical knowledge for relevant stakeholders to enhance the quality of the governance system. From the perspective of TAM, it is evident that UDC has catered to the underserved for over fifteen years. This is feasible owing to alignment with TAM.

Furthermore, the study's findings may offer assistance to researchers and policymakers focused on e-governance, women's issues, and gender development. The results of the study can serve as evidence for policymakers, development partners, non-governmental organisations, and representatives of the populace. Insights regarding women's needs are derived from the UDC, along with its contributions to the advancement of women, particularly in the areas of education and employment status. The study results indicated significant issues and socio-economic challenges encountered by women and UDC in haor regions. Empirical findings similarly indicate the status of gender equality in the delivery of services from the UDC in haor areas. The findings presented herein may serve as a valuable resource for stakeholders engaged in the review of women's development policy, rural development policy, and ICT policy. Stakeholders can concurrently formulate suitable measures to bridge the policy gap, taking into account underserved and underprivileged groups, including women in the Haor region.

### 11.3 Policy recommendations

The research findings demonstrate that critical data from government personnel in both central and field administrations, local representatives, civil society members, community-based organisations, UDC service seekers, and UDC entrepreneurs yields a range of policy recommendations. This section presents the key recommendations.

#### 11.3.1 Promoting Consciousness

Understanding within the local community is essential for the advancement of women, as there is a prevalent perception that women's roles are confined to household responsibilities. Although advancements in women's rights have been made since independence, challenges persist in both urban and rural settings. The availability of amenities for urban women exceeds that of rural women, thereby underscoring the existing gender disparity. Government entities and social leaders across various institutions have the capacity to enhance awareness regarding women's rights and opportunities. The family plays a significant role in the advancement of women's rights, and it is essential for the social system to recognise and incorporate their contributions. Promoting awareness within local communities is essential for the progress of women.

#### 11.3.2 Establish Effective Communication Infrastructure

The communication system in the Haor region, encompassing roads and transport infrastructure, is significantly deficient as a result of neglect by local authorities. During the dry season, motorbikes and autorickshaws serve as the sole modes of transportation, while flooding causes roads to remain submerged for six months annually. To enhance the current conditions, it is essential that roads are designed to be weather-resistant and environmentally sustainable. In the rainy season, individuals use engines and manual boats for transportation; however, most do not possess the financial resources to acquire these vessels. The risk associated with this vulnerability increases for women and girls when they leave their homes. An effective communication system can significantly impact education and economic activity.

### 11.3.3 Advancement of female education

The Haor area is characterised by underdevelopment and a low literacy rate, especially among the female population. The factors contributing to this situation encompass unclear basic rights status, insufficient primary education, geographical distance from educational institutions, and the economic conditions of parents. The economy of the region is primarily based on agriculture, encompassing a range of occupations, such as fishing, entrepreneurship, daily labour, and various forms of employment. The limited rate of women's education can be attributed to insufficient awareness and the prevalence of early marriage. Advocating for women's education is essential, requiring active participation from both families and government entities.

### 11.3.4 Formulation of a recruitment policy for female entrepreneurs

The majority of appointments during UDC openings were secured by women entrepreneurs in the Haor region. A decline has been observed in the number of female entrepreneurs. The analysis reveals that most UDCs operate without the participation of women entrepreneurs. The UDC currently lacks a recruitment policy specifically aimed at the inclusion of women entrepreneurs. The recruitment of women entrepreneurs is crucial for improving the quality of service delivery. Increasing the representation of female entrepreneurs is crucial.

### 11.3.5 Enhancement of the sanitation infrastructure

The sanitation system at Union Parishad exhibits unsanitary conditions. In the majority of instances, UDC lacks distinct sanitation facilities. The shared use of the same lavatory by UP workers, individuals seeking services, and UDC entrepreneurs presents unsanitary conditions. The sanitation system currently exhibits deficiencies and has not demonstrated any indications of enhancement over an extended duration. The government should prioritise enhancements to the sanitation system to promote the participation of female entrepreneurs at UDC. An effective strategy should involve the creation of specialised hygiene systems tailored for female entrepreneurs.

### 11.3.6 Ensuring social security

The sanitation system at Union Parishad exhibits unsanitary conditions. In the majority of instances, UDC lacks dedicated sanitation facilities. The shared use of the lavatory by UP workers, individuals seeking services, and UDC entrepreneurs presents unsanitary conditions. The sanitation system is currently inadequate and has not demonstrated any improvement over an extended duration. The government should prioritise enhancements to the sanitation system to promote the participation of female entrepreneurs at UDC. An effective strategy should involve the creation of specialised hygiene systems tailored for female entrepreneurs.

### 11.3.7. Delivering training to female entrepreneurs

Training is essential for the development of human skills, particularly for women entrepreneurs in UDCs who leverage digital tools and information technology to deliver services. Effective operation requires proper proficiency. Training is essential for women entrepreneurs to improve their skills, considering the ongoing advancements in tools and technologies. The local government has the capability to deliver critical training to entrepreneurs by leveraging the skills of programmers and assistant programmers at the grassroots level.

### 11.3.8. Employment stability and sufficient earnings

The UDC entrepreneurship programme represents a collaborative initiative involving both public and private sectors. The project is managed by the UP chairman, who operates under the direction of Upazila and district administrations. The primary responsibility of the chairman is to recommend UDC women entrepreneurs to the Upazila administration for

appointment, which serves to mitigate job displacement and the risk of unemployment. Insufficient financial resources for female entrepreneurs, who depend on expertise, access to services, internet connectivity, and a reliable electrical supply, frequently result in inadequate income and unemployment. Securing job stability and financial resources is essential for delivering public and commercial services to marginalised populations.

### 11.3.9 Prevent underage marriage.

The survey indicates that a majority of female entrepreneurs are young individuals who are currently engaged in studies and employment at union digital centres. Although the government has implemented a prohibition on early marriage, local authorities actively enforce this regulation. The issue is exacerbated by poverty. Education, awareness, and social movements are instrumental in addressing early marriage and decreasing the prevalence of women entrepreneurs in UDC. Local authorities should prioritise raising awareness to mitigate the negative consequences of early marriage.

### 11.3.10 Stop Sexual Harassment

The primary objective of UDC stakeholders is to reduce the instances of sexual harassment faced by female entrepreneurs in the Haor region. Local governments, community representatives, educators from schools and colleges, and religious leaders can collaborate to organise seminars, facilitate youth conferences, raise awareness, and enhance women entrepreneurs' safety.

### 11.3.11 Control over excessive authority exercised by the UP chairman and secretary

The local chairman and secretary of the UP play a crucial role in the execution of UDCs. However, their unexpected engagement in the region has led to instances of corruption and nepotism within the recruitment process. Inadequate oversight has resulted in UDCs obtaining services without compensation. The overuse of power adversely affects UDCs and businesses. A considerable proportion of UDCs exhibit suboptimal performance due to insufficient collaboration. To address this issue, it is essential for women entrepreneurs and UDCs to receive support from local elected officials, while effective oversight from field administration may reduce the frequency of such incidents.

### 11.3.12 Guaranteeing employment security

Entrepreneurs in UDCs experience a deficiency in employment stability, which leads to diminished earnings for business owners. A considerable number of individuals have left due to inadequate income. The chairman of the UP possesses the authority to terminate employment. The newly appointed chairman is responsible for selecting entrepreneurs according to their preferences. To address this issue, the government should implement policy directives that limit the jurisdiction of the local UP chairman.

### 11.3.13 Training

The research indicated that UDC entrepreneurs frequently lack adequate training, despite receiving logistical support from UNO and DC offices. The lack of adequate training can lead to difficulties in managing digital devices and addressing ICT-related problems, even with the most advanced equipment available. Implementing regular training schedules could potentially address this issue.

### 11.3.14 Ensuring family support

Support from family is essential at every stage of life, particularly for women who depend on familial assistance to engage in employment outside the home. This research identified several married women entrepreneurs who discontinued their entrepreneurial activities due to a lack of adequate family support, which encompasses assistance from parents and in-laws. If social methods prioritise family support, their presence may improve their effectiveness. Elected officials and governmental organisations collaborate to enhance public awareness in the local community.

### 11.3.15 Create a permanent position for entrepreneurs at the UDC

In 2016, the Local Government Division created an additional position for Accounts Assistant cum Computer Operator through a gazette announcement. This action led to disruptions in the activities of entrepreneurs at the UDCs, causing significant distress among the entrepreneurs. Additionally, certain Union Parishads are obtaining services from the UDC without providing compensation. The UDC entrepreneurs' welfare association is advocating

for the establishment of permanent appointments to enhance job security for its members. The government might consider these measures for the advancement of UDC entrepreneurs.

### 11.4 Limitations of the Study

The previous data has not been archived due to the absence of a baseline study identified to date. This study has gathered data directly from respondents, who provided answers based on their experiences; however, the accuracy of this data may be uncertain. The sample size was insufficient for making reliable inferences, as the study encompassed only 18 out of 195 UDCs within the research area. Identifying registered dwellers with experience in both roles as service recipients and service providers proved to be challenging.

- The study used a cross-sectional methodology, meaning that participants were only questioned once to gauge their opinions on the relevant factors, which were the distribution of union digital services and their impact on women in particular. Findings on different parts of the relationships studied here can be more broadly generalised using cross-sectional data. By employing a before-and-after research design, we can gain a clearer understanding of the cause-and-effect relationship between union digital services and their impact on women's education and employment in haor areas.
- The participants in the focus group discussions (FGDs) and in-depth interviews are informed citizens from haor areas, providing detailed responses to the interview checklist and FGD guidelines. The observed phenomenon may result from the respondents' constrained schedules and insufficient comprehension of the interview questions. The duration of the IDI and FGD interviews was 30–40 minutes, potentially leading to a reduction in participant engagement during the interviews and discussions.
- The UDC users are comprised of survey respondents from haor regions who submitted their responses to the survey questionnaire. The questionnaire is distributed solely via the Kobo software for the purpose of data collection. Respondents may face difficulties in understanding and responding to the questions in comparison to conventional paper forms.
- The independent variables employed in this study are constrained and do not fully encompass the effects of union digital services on women's education and

employment in haor regions. This research, employing five independent variables, may not fully elucidate the factors shaping UDC users' perspectives on its effect on women in haor areas. The limited independent variables could impact the results of the study.

- The research involved a sample of 720 respondents surveyed, 80 participants engaged in in-depth interviews, and 16 focus group discussions conducted across four haor districts in Bangladesh. The Haor region comprises seven districts located in the northeastern area of Bangladesh. The findings may lack generalisability because a small number of respondents used union digital services. The involvement of a significant number of respondents facilitated a thorough analysis of the impact of union digital services on women in haor regions. Subsequent investigations are necessary to confirm these results via extensive studies to guarantee their applicability across broader contexts.

### 11.5 Scope of Further Research

This document outlines specific limitations and suggests further areas for research. Firstly, future studies may concentrate on evaluating the performance of UDC entrepreneurs in the Haor area, ensuring an absence of gender bias. Secondly, there is a noticeable increase in the dropout rate among women entrepreneurs in haor regions. The findings of the study indicate that male entrepreneurs exclusively manage specific UDCs. The dropout rates for women entrepreneurs at the UDC are rising in haor regions. Future studies should concentrate on strategies to mitigate the dropout rate at the UDC in haor regions. Thirdly, this study is conducted across four districts, with a focus on Hoar. Additional research may be carried out in seven haor districts, expanding beyond the four currently examined in Bangladesh within the same area of study. Finally, the sample size for this study is relatively small when compared to the overall UDC users or beneficiaries in haor areas. The findings of the study suggest that further research involving a larger sample size on the same issue may be required.

### 11.6 Concluding remarks

In summary, the socio-economic profile of the respondents is as follows: The majority of respondents had primary education (29%, with 32.8% being female and 23.9% being male);

the income level ranged from 10000 to 20000 BDT (73.3%, with 79.0% being female and 65.6% being male); the most significant occupation was household work (35.6%, with 61.4% being female and 0.3% being male); and the majority of respondents fell within the age group of 31–50 years (51.3%, with 51.8% being female and 50.5% being male). The research identified many methods of spreading UDC services, including paper-based (73.7% for females and 66.2% for males), verbal (20.2% for females and 20.3% for males), cell phone (3.6% for females and 8.2% for males), and email (2.4% for females and 5.2% for males). Furthermore, the research investigated an alternative method of distributing UDC services: delivering them directly to people's homes. The user's level of satisfaction with UDC performance is reasonably high, especially with the internet speed of UDC (42.2% for females and 31.8% for males), the availability of essential equipment at UDC (44.8% for females and 39.7% for males), and the competence of the entrepreneurs at UDC (52.0% for females and 43.6% for males). The remaining two aspects, namely power availability in UDC (29.9% for females and 26.6% for males) and entrepreneurial behaviour in UDC (39.8% for females and 34.1% for males), are very satisfactory. Similarly, respondents who sought UDC services expressed moderate satisfaction with the overall service delivery of UDC, with 62.7% of females and 53.8% of males reporting satisfaction. The research examines the impact of union digital services on many aspects of women living in the Haor region. These areas provide convenient access to government, information, and commercial services, with a moderate effect on 44.3% of female and 41.3% of male respondents. They also contribute to improving women's access to information and services, with a moderate impact on 43.9% of females and 37.4% of male respondents.

Furthermore, they facilitate the expansion of health information and telemedicine, with a moderate impact on 38.8% of female and 35.4% of male respondents. Additionally, they contribute to the proliferation of computer literacy, with a high impact on 40.0% of female and 36.4% of male respondents. Moreover, they promote education and literacy, with a moderate impact on 41.7% of female and 33.1% of male respondents. Furthermore, they lead to an increase in employment opportunities for women, with a high impact on 40.0% of female and 36.4% of male respondents. Lastly, they contribute to enhancing women's participation in the decision-making process of household and local government institutions, with a moderate impact on 52.0% of female and 44.9% of male respondents.

The report also reveals the specific kinds of digital services that women in the Haor region are seeking from UDCs. The percentages for the different services are as follows: education (52.2%), government form download (51%), birth, death, and citizen certificate (58.3%), health information and telemedicine (60.1%), livelihood information (48.9%), list of VGD and VGF cards (64.6%), type and data entry (58.4%), printing and photocopying (56.3%), email and internet browsing (52.8%), scanning and laminating (55.6%), photography (54.4%), and various government services (51.4%). In addition, the study indicates services such as OMS cards, electricity bill payment, COVID-19 vaccinations for children, applications for an NID card, assistance in finding safety and shelter after a storm, microcredit, and insurance services. The research discovered that UDS impacts some significant aspects of women living in the Haor region. The areas of focus include education for women and girls, healthcare for women and girls, job possibilities for women, and participation in decision-making within households and local government organisations. The Haor region aims to enhance women's education. The UDCs have the potential to effectively mitigate technical obstacles, improve literacy rates, and raise educational awareness. By prioritising the training and advantages provided to women, UDCs may effectively address poverty, provide job prospects, enhance societal consciousness, and give educational resources and scholarships to female students.

In addition, they can promote consciousness about the significance of women's education through campaigns and social awareness initiatives. UDCs provide several forms of information, including education-related information and financial assistance, via women's gatherings or yard meetings. In addition, they provide a diverse range of training programmes and actively promote women's education on the benefits of digital technology. UDCs may eventually improve the quality of education for women in the Haor area by implementing essential measures. The provision of UDC services in Haor regions has had a substantial influence on women by providing them access to services that primarily cater to their needs. The enhanced availability of ICT has facilitated women's independent access to these services, eliminating the need for external assistance or extensive travel. Women are more inclined to use these services due to their ability to independently accomplish essential activities and make use of digital services, thereby fostering independence. The implementation of UDC initiatives has resulted in a notable rise in women's engagement in state activities and a significant boost in their self-assurance within the area. However, a

thorough examination of the impact of UDSs on women remains lacking. Obtaining them via official services or information is an effortless process that might vary in cost and time required. Women now have the autonomy to access government services independently; they just need to attend UDC and engage in discussions with company owners about their concerns. Regarding gender disparity, the survey revealed that most respondents denied the existence of gender-based inequality, while a minority of respondents accepted its presence. They provide evidence that there is gender inequality.

The UDC prioritises nepotism, favouritism, education, politics, and privileged groups. Ultimately, the analysis revealed many significant obstacles. The challenges faced can be attributed to various factors, such as inadequate communication infrastructure, frequent natural calamities, low income levels, UDC's proximity to the local market, absence of social security measures, prevalence of sexual harassment, lack of separate sanitation facilities for women, uncooperative attitude of UP chairman and secretary, prevalence of early marriages, health issues, insufficient capital, inadequate training, flawed performance evaluation systems, workplace restrictions, lack of familial support, lack of job security, limited job prospects, and misinterpretation of religious beliefs. Moreover, there are several issues that are specific to UDCs. The issues identified are as follows: absence of a defined guideline and policy for UDC management; inadequate selection process for UDC entrepreneurs; scarcity of skilled female entrepreneurs; insufficient space for UDC operations; lack of knowledge among local UP chairmen regarding ICT usage; slow internet speeds; frequent power outages; political interference; limited awareness; underutilisation of digital equipment; and difficulties faced by Upazila and DC offices in monitoring and supervising UDC activities.

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Dhaka University Institutional Repository

Annexture 1

## Survey Questionnaire for UDC Users or Service Recipients

## Declaration

This questionnaire will take around 30 minutes. Please you will give right answer as much as possible. Your participation of this study is completely your choice. You do not have any pressure to participate in this study. Everything of the study and result will be preserved and confidential. Researchers will have accessed to the information provided by you. This study will not bring your benefits directly but it will be helping to the policy makers to review the existing procedure of public service delivery at the grass root level.

Date:

Beginning:

Ending:

| **A. Respondent's details** | | | | | | |
|---|---|---|---|---|---|---|
| 1.1. Division | | | | | | |
| Dhaka (1) | Chottrogram (2) | Sylhet (3) | Mymensingh (4) | | | |
| 1.2. District | | | | | | |
| Kishoreganj (1) | Bramanbaria (2) | Sunamganj (3) | Netrokona (4) | | | |
| 1.3. Upazila | | | | | | |
| Ans: | | | | | | |
| 1.4. Union Digital Centres | | | | | | |
| Ans: | | | | | | |
| 1.5.Gender | Male (1) | Female (2) | Others (3) | | | |
| 1.6. Age | | | | | | |
| Ans: | | | | | | |
| 1.7. What is the level of education of the respondents? | | | | | | |
| Primary (1) | JSC/ equivalent (2) | SSC/ equivalent (3) | HSC/ equivalent (4) | Degree/ honors equivalent (5) | Masters equivalent (6) | M.Phil./ Ph.D. (7) |
| 1.8. Which of the following words most accurately your present occupation? | | | | | | |
| Farmer (1) | Fisherman (2) | Small Businessman (3) | Govt. employee (4) | Teacher (5) | | |
| Student (6) | HH work (7) | Day labourer (8) | Unemployed (9) | Others (10) | | |
| 1.9. What is your approximate monthly income? | | | | | | |
| Ans: | | | | | | |
| | | | | | | |

| **B. Dissemination of Union Digital Services** | | |
|---|---|---|
| 2.1Does UDC has an electric power connection? | Yes (1) | No (2) |

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| | | | | | |
|---|---|---|---|---|---|
| 2.2 Does UDC have electronic equipment (computers, printers, video cam, and photocopiers) facilities? | | | | | |
| Ans: | Yes (1) | No (2) | | | |
| 2.3 If yes, what devices have the UDC below? | | | | | |
| Computer (1) | Printer (2) | Photocopier (3) | Video cam (4) | Others (5) | |
| 2.4 Does UDC have an internet connection? | Yes (1) | No (2) | | | |
| 2.5 If yes, which types of internet connections are used by UDC for service delivery? | | | | | |
| Ans: | Mobile Internet (1) | Broadband (2) | Wifi (3) | | |
| 2.6 How you were first informed about UDC? | | | | | |
| Ans: | Miking (1) | Postering (2) | Meeting (3) | Billboard (4) | Others (5) |
| 2.7 Does UDC have any complaint boxes about their service delivery? | | | | | |
| Ans: | Yes (1) | No (2) | | | |
| 2.8 Which UDC services did you use? Please choose your response from the list of services below. | | | | | |
| **Government Services** | | | | | |
| 2.8.1Education/ admission test & form / exam result | Yes (1) | No (2) | | | |
| 2.8.2 Govt. forms download | Yes (1) | No (2) | | | |
| 2.8.3 Birth /death/ citizen certificate | Yes (1) | No (2) | | | |
| 2.8.4 Overseas employment | Yes (1) | No (2) | | | |
| 2.8.5 Passport/ TIN (tax) certificate | Yes (1) | No (2) | | | |
| 2.8.6 Health | Yes (1) | No (2) | | | |
| 2.8.7 Livelihood information | Yes (1) | No (2) | | | |
| 2.8.8 Land | Yes (1) | No (2) | | | |
| 2.8.9 VGD/VGF card database | Yes (1) | No (2) | | | |
| 2.8.10 Agricultural Information | Yes (1) | No (2) | | | |
| **Commercial Services** | | | | | |
| 2.8.11 Type/Data entry | Yes (1) | No (2) | | | |
| 2.8.12 Printing and Photocopying | Yes (1) | No (2) | | | |
| 2.8.13 E-mail and Internet browsing | Yes (1) | No (2) | | | |
| 2.8.14 CV and Job application | Yes (1) | No (2) | | | |
| 2.8.15 Computer/ICT/English Training | Yes (1) | No (2) | | | |
| 2.8.16 Phone/Video Conferencing | Yes (1) | No (2) | | | |
| 2.8.17 Mobile Banking / Bank | Yes (1) | No (2) | | | |
| 2.8.18 Scanning & Laminating | Yes (1) | No (2) | | | |
| 2.8.19 Photography | Yes (1) | No (2) | | | |
| 2.8.20 Online Visa application / visa | Yes (1) | No (2) | | | |
| 2.8.21 Trade license | Yes (1) | No (2) | | | |
| 2.8.22 Land recording | Yes (1) | No (2) | | | |
| 2.8.23 E-tickets for air/bus/rail | Yes (1) | No (2) | | | |
| **Information Services** | | | | | |
| 2.8.24 Various government allowances | Yes (1) | No (2) | | | |
| 2.8.25 Insurance services | Yes (1) | No (2) | | | |
| 2.8.26 Education | Yes (1) | No (2) | | | |
| 2.8.27 Law and human rights | Yes (1) | No (2) | | | |
| 2.8.28 Tourism | Yes (1) | No (2) | | | |
| 2.8.29 Environment and Disaster management | Yes (1) | No (2) | | | |
| 2.8.30 Science and technology | Yes (1) | No (2) | | | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2.8.31 Industry and commerce | | | | | Yes (1) | No (2) |
| 2.9 What type of services you took from the UDC? | | | | | | |
| Ans: | Paper-based (1) | Email (2) | Verbal (3) | | Mobile Phone (4) | |
| 2.10 Can you rank your satisfaction about dissemination of Union Digital Services in the following areas? | | | | | | |
| Strongly dissatisfied=1, Not much satisfied=2, Moderately satisfied=3, To a great extent satisfied=4, Fully satisfied=5 | | | | | | |
| 2.10.1 Internet speed | | | 1 | 2 | 3 | 4 | 5 |
| 2.10.2 Available of necessary equipment | | | 1 | 2 | 3 | 4 | 5 |
| 2.10.3 Availability of electricity | | | 1 | 2 | 3 | 4 | 5 |
| 2.10.4 Skilled entrepreneur | | | 1 | 2 | 3 | 4 | 5 |
| 2.10.5 Behavior of entrepreneur | | | 1 | 2 | 3 | 4 | 5 |
| 2.10.6 Overall service delivery by UDC | | | 1 | 2 | 3 | 4 | 5 |

| | | |
|---|---|---|
| 3.0 Do you think Union Digital Services are playing any pivotal role for women in getting more education and employment opportunities? | | |
| Ans. | Yes (1) | No (2) |

| **D. Equal access to UDC provided services** | | | | | |
|---|---|---|---|---|---|
| 4.1 Do you think that everybody has equal access to services with considering male or female? | | | | Yes (1) | No (2) |
| 4.2 If no, what the main factors are responsible against ensuring equal access to UDC services? | | | | | |
| Ans: | Gender Identity (1) | Local elite Influence (2) | Local political Influence (3) | Education (4) | Patriarchal Social System (5) |
| Traditional social beliefs and Practices (6) | | Conservative Interpretation of religious bindings (7) | | Others (8) | |
| 4.3 If others, specify the factors. | | | | | |
| | | | | | |

| **E. Decision Making** | | | | | | |
|---|---|---|---|---|---|---|
| 5.1 Do you think that access to digital services can boost women's awareness in haor area? | | | | | | |
| Ans: | Yes (1) | No (2) | | | | |
| 5.2 Do you believe that UDC enhanced women's participation in the decision-making process in a family? | | | | | | |
| Ans: | Yes (1) | No (2) | | | | |
| 5.3 Do you believe that UDC enhanced women's participation in the decision-making processes of local institutions? | | | | | | |
| Ans: | Yes (1) | No (2) | | | | |
| 5.4 In your assessment, what effect done by UDC on women in haor areas in different sectors related with their advancement? Please rank your opinion from the following points: Very low=1, Low=2, Moderate=3, High=4, and Very high=5 | | | | | | |
| 5.4.1 Easy access to government and commercial information and | | | 1 | 2 | 3 | 4 | 5 |

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| | | | | | |
|---|---|---|---|---|---|
| services | | | | | |
| 5.4.2 Improved access to information and services for Haor women | 1 | 2 | 3 | 4 | 5 |
| 5.4.3 Increased access to health information and services | 1 | 2 | 3 | 4 | 5 |
| 5.4.4 Spread of computer literacy | 1 | 2 | 3 | 4 | 5 |
| 5.4.5 Promotion of education and literacy | 1 | 2 | 3 | 4 | 5 |
| 5.4.6 Young women's employment is increasing. | 1 | 2 | 3 | 4 | 5 |
| 5.4.7 Increase participation of women in the decision-making process of HH and LGIs | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 5.5 Do you think services through UDC are helping women in haor region? | | | | | |
| Ans. | Yes (1) | No (2) | | | |
| 5.6 If yes, how? | | | | | |
| Ans: | Employment opportunity (1) | DM in HH (2) | DM in LGs (3) | Equal access to DS (4) | Skill dev. through Edu. & training (5) |

| |
|---|
| **G. Challenges** |
| 8.1 According to you, what are the main challenges that UDC face in delivering services? |
| Ans: |
| 8.2 What are the difficulties that Haor women face as UDC users? |
| **Ans:** |
| **H. Suggestions** |
| 9.1 What is the solution to solve the problems that Haor women are currently facing? |
| Ans: |
| 9.2 What is the best way to solve the existing challenges faced by UDCs in the Haor area? |
| Ans: |

**Thank you for your cooperation.**
Name of the enumerator:
Signature of the enumerator:
Cell No:

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Annexture 2

**Interview Checklist for the Participants**

**(For UDC Entrepreneurs)**

Gender: Designation:

Age: Upazila/ UDC:

1. What strategies do UDCs employ to disseminate digital services in the Haor region?

   Ans:

2. What portion of the service seekers are women?

   Ans:

3. Which types of digital services are more in demand among women?

   Ans:

4. Did you find any gender disparity while delivering services to haor women?

   Ans:

5. How is your experience to receive support from UP chairman and UP secretary?

   Ans:

6. How is your experience to get support from DC and UNO offices?

   Ans:

7. Do you think that UDC services have effects on women, especially in education and employment in haor areas? How?

   Ans:

8. Which types of problem or challenges you faced to deliver services while deal with female users?

   Ans:

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**Interview Checklist for the Participants**

**(For DC/DDLG and Upazila Administration)**

Gender: Designation:

Age: Upazila:

1. What do you think about UDC's strategies for disseminating services to women?

Ans:

2. Does delivering services to Haor women require any special requirements?

Ans:

3. Do Union digital services have an impact on women, particularly in education and employment in haor areas?

Ans:

4. Did you find any gender disparity in the UDCs in the Haor area while delivering services?

Ans:

5. What are the main challenges you encountered during the monitoring and supervision of UDCs in the Haor area?

Ans:

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**Interview Checklist for the Participants**

**(For A2I Officials/ICT Expert)**

Name: Gender:

Designation: Age:

1. Do you have any assessment systems to measure the performance of UDCs across the country, particularly in disadvantaged areas like Haor?

Ans:

2. Which digital services are the most demanding for women in haor areas?

Ans:

3. What are the significant effects of UDC across the country, particularly in disadvantaged areas, after its establishment?

Ans:

4. Does UDC make a significant contribution to improving women's education and employment status in the Haor region?

Ans:

5. In your opinion, what are the main challenges faced by UDC in the Haor region?

Ans:

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**Compulsory for all participants**

In your assessment, do UDC Services have effects on women in haor areas in the following sectors?

| Identified Areas | Effects |
|---|---|
| Equal access to government, commercial and information services | |
| Women and girls' education | |
| Women and girls' health services | |
| Women employment | |
| Decision making in HH & LGIs | |
| Gender disparity | |

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Annexture 3

**Focus group discussion for Participants**

**(Community-based organizations (CBO) and women users)**

**Introduction:**

A brief introduction of all is necessary: the purpose of the research, projected time, familiarity with the recording system, discussion guidelines, the importance of everyone's participation, break time (if required), the issue of confidentiality, rewards for completion, etc.

Focus Group No: Time and date:

Number of Participants: Male: Female: Total:

Place Taken:

*Topic Generation*

- Do you visit the UDC to get information and services?
- If so, how often do you visit, and what services do you use at the UDCs? Please explain your experience. If not, then why?
- What kind of UDC services are Haor women looking for? Please provide specifics about your responses.
- Do you believe that the UDCs have helped to reduce the distance, time, and cost of service delivery while increasing access to government, commercial, and information services? Please provide specifics about your responses.
- Do you believe that UDCs affect women in terms of equal access to information and services in areas such as education, health, decision-making in HH and LG institutions, employment, and income? Please explain your answer.
- What are the most pressing issues and socioeconomic constraints that women suffer, if any, while seeking services? Please provide specifics about your responses.
- Is there any discrimination when it comes to UDC services for women?
- What suggestions do you have so that UDCs can solve these issues, such as socioeconomic problems and gender disparity? Please provide specifics about your responses.

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Closing remarks

Thanks, the participants

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Annexture 4: Number of FGDs and Participants by Districts and Upazilas

| Area | | Community Based Organization / Women users | Number of FGDs | Participants |
|---|---|---|---|---|
| **Districts** | Upazilas | | | |
| **Brahmanbaria** | Nasirnagar | BRAC NGO | 01 | 05 |
| **Kishoreganj** | Austragram | BRAC NGO | 01 | 05 |
| | Mithamain | BRAC NGO | 01 | 05 |
| | Itna | BRAC NGO | 01 | 05 |
| | Nikli | BRAC NGO | 01 | 05 |
| | Bajitpur | BRAC NGO | 01 | 05 |
| **Netrokona** | Khaliajuri | BRAC/ASA/Grameen Bank | 01 | 05 |
| | Mohanganj | FIVDB/ Mahila Samajkallan Samity | 01 | 05 |
| | Atpara | BRAC NGO/ BARSIK | 01 | 05 |
| | Madan | POPI NGO/FIVDB | 01 | 05 |
| | Kalmakanda | BRAC NGO | 01 | 05 |
| **Sunamganj** | Dharampasha | BRAC NGO | 01 | 05 |
| | Tahirpur | BRAC NGO | 01 | 05 |
| | Derai | FIVDB | 01 | 05 |
| | Jagannathpur | BRAC NGO | 01 | 05 |
| | Shantiganj | FIVDB/PADAKEP MUK | 01 | 05 |
| **Total** | | | 16 | 80 |

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Annexture 5: Code book or framework

| Theme 1 | Theme 2 | Theme 3 | Theme 4 | Theme 5 | Theme 6 | Theme 7 | Theme 8 |
|---|---|---|---|---|---|---|---|
| Education service (3)<br>Broad exam results 1<br>Online application for admission 1<br>Public Exam Result 1<br>Scholarship / stipend application 1 | Computer training (3)<br>Skill development training (3)<br>Application for sewing machine training 1<br>Empowerment training 1<br>Various job training 1 | Government Allowances (5)<br>Maternity allowance (8)<br>VGD-VGF card list (10)<br>Widow allowance 3<br>Old-age allowance 4<br>Disability Allowance 2 | Health service 8<br>Adolescent health care 1<br>Covid Vaccination 1<br>Child vaccination 1 | Relief 1<br>OMS 1<br>TCB 1<br>Shelter during flood 1 | Birth-death certificate 12<br>Testimony 1<br>Citizen certificate 1<br>Character certificate 1<br>NID card 4 | Photocopy 5<br>Photography 3<br>Laminating 2<br>Mobile Banking 2<br>Email 1<br>Govt. form download 1<br>Computer compose 1<br>Govt. circular printing 1 | Agriculture information 2<br>Employment information 2<br>Micro-credit 1 |

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Theme Development

| Education services | Skill development training | Social safety net programs | Health services | Disaster management services | Government services | Private services | Information services |
|---|---|---|---|---|---|---|---|
| Education service (3)<br>Broad exam results 1<br>Online application for admission 1<br>Public Exam Result 1<br>Scholarship / stipend application 1 | Computer training (6)<br>Application for sewing machine training 1<br>Empowerment training 2 | Government Allowances (5)<br>Matertinity allowance (8)<br>VGD-VGF card list (10)<br>Widow allowance 3<br>Old-age allowance 4<br>Disability Allowance 2<br>Micro-credit 1 | Telemedicine 8<br>Appointment for Doctor 4<br>Medical Visa 1<br>Doctor Bari (Digital Heatlh Service Platform) 1<br>Covid-19 Vaccination 1<br>Child vaccination Information 1 | Relief 1<br>OMS 2<br><br>Shelter during flood 1 | Birth-death certificate 12<br>Testimony 1<br>Citizen certificate 1<br>Character certificate 1<br>NID card 4<br>Govt. form download 1 | Photocopy 5<br>Photography 3<br>Laminating 3<br>Mobile Banking 2<br>Email 1<br>Computer compose 1<br>Govt. circular printing 1 | Agriculture information 2<br>Employment information 2 |