Journal of Business and Development Studies (ISSN: 2790-0703 & E-ISSN:3006-2195)
Volume: 04, Issue: 01, 2025 Web: www.isu.ac.bd/journal

RESEARCH ARTICLE

Exploring the Aspects of ICT Skills of Local Government Functionaries in Bangladesh: Insights from Ten Union Parishads

H.T.M. Quader Newaz [a], **Farhana Newaz** [b]

[a] Professor and Treasurer, International Standard University (ISU)
[b] Lecturer, Department of Business Administration, ISU

ABSTRACT
In recent years, digital services have been implemented in all sectors of the country by the Government of Bangladesh (GoB), to ensure the overall development of the country. Information, Communication, and Technological (ICT) tools have been provided to local government functionaries in all Union Parishads (UP) as part of the development process throughout the country. One of the main goals is to equip UP functionaries with ICT knowledge and skills, enabling them to possess the necessary digital tools and skills required for delivering digital services to the masses. This study provides significant insights into the current level of proficiency in ICT among Union Parishad functionaries, including secretaries, chairmen, and members. It applied a variety of quantitative tools, including frequency test, chi-square correlation, and ordinal logistic regression, to determine the ICT competency among the UP functionaries. The research selected 100 Union Parishads from 4554 UPs across the country using a simple random sampling process. Afterwards, 100 respondents were chosen from the selected 10 UPs to investigate the specific objectives of the study. By administering the chi-square test, the article showed that a number of explanatory factors, including respondents' age, training attended, internet accessibility, word processing proficiency, internet browsing, emailing, e-filing systems, and presentation tool use, significantly correlated with the outcome variable or the respondents' satisfaction levels. Additionally, utilizing ordinal logistic regression, the study revealed three notable predictors, which are explanatory variables in the model. These are respondents' skills in computer literacy, years of internet use, and use of email.

ARTICLE HISTORY
Received: February 18, 2025
1st Revision: March 20, 2025
2nd Revision: June 22, 2025
3rd Revision: Sept. 2025
Accepted: October 14, 2025
Online Publication: Nov. 2025

KEYWORDS
Union Parishad Digital Services, Information and Communication Technology, Digital skill, Functionaries, Bangladesh

1. Introduction

Bangladesh is a republic with two levels of government: national and local. The Acts of Zila parishads (2000), Upazila parishads (1998, amended 2009), Union parishads (2009), Pourashavas (2009), City

Corresponding Author: H.T.M. Quader Newaz, Professor and Treasurer, ISU, Civil Engineers Bhaban, 69, C/A Bir Uttam AK Khandakar Road, Dhaka 1212 email: treasurer@isu.ac.bd

corporations (2009) have been framed in line with the constitution and that all acknowledge the importance of local government. The local government division is situated in 64 administrative areas, including single-level metropolitan areas comprised of 13 city corporations and 329 municipalities (Pourashavas). Administrative set up comprises a three-layered country local government framework containing 64 Zila (region) parishads, 492 Upazila (sub-region) parishads, 4,574 union parishads, and three slope region parishads (Country Profile 2017-18, and LGRD Information and Communication Technology (ICT) has become an irreplaceable piece of the governmental exercises at the beginning of the twenty-first century (Bangladesh Digital Revolution, 2017). In spite of the fact that many developed countries started the ICT move of governmental activities long ago, the remainder countries of the world have started to utilize ICT in everyday business in the recent past. The utilization of ICT, for example, Wide Area Networks, the internet, mobile and computer uses, etc., has resulted in an amazing freedom in arranging governmental obligations performance around the world. In the course of the most recent eleven years, Bangladesh saw a solid wave of development in the majority of the development indicators, ranging from the economy to human and social turn of events (Ibid). The past ruling party, i.e. Awami League Government's Vision 2021, planned to transform Bangladesh into a Middle-income nation by 2021, and as a result of actions taken, the nation has recorded positive monetary turn of events and poverty reduction since 2008. One of the critical tools for accomplishing Vision 2021 was the resorting to the 'Advanced Bangladesh' approach, and thus to the use of ICT (Information and Communication Technology) as a device for improvement and maintainability. The aim was to make Bangladesh a mechanically progressed country by 2021.

World Summit on Information Society (WSIS) in Geneva and in Tunis back in 2003 and 2005 (Ministry of Science and ICT, 2009) respectively addressed the issue of Information and Communication Technologies (ICTs) as a key development factor across the world. Concerned studies argued that a country’s development largely depends on the ability of access and usage of relevant information effectively (Hoque and Sarwar, 2015). The ICT access provides masses of people with confidence to get important information, which plays a vital role in empowering them and

overcoming social exclusion (Harande, 2009). Heeks and Bhatnagar (1999) further argued that the flow of Information and Communication Technologies (ICT) accelerates the work capability to provide the e-services (Heeks and Bhatnagar, 1999)- crucial for overall development in a developing country, like Bangladesh. Given the importance of ICT usage, governments of developing countries have been stressing to invest in ICT in the process of modernization, information availability in rural areas too, and that Bangladesh is no exception to the strategy (Shore and McAnany, 1980).

Recent studies have identified that ICT has become an essential component of governmental operations in both developing and developed nations globally (Afsar, R., 2010). Despite the fact that developed nations have been using ICT to manage a variety of governmental activities for several years, the rest of the world has just started to embrace ICT (Faroqi, M. G., 2014). The wide application of ICT, for instance, the internet, Wide Area Networks (WAT), mobile computing devices, has become a vital tool for efficient handling of the important governmental and non-governmental responsibilities around the world. It is important to note that the Government of Bangladesh (GoB) has recently addressed the need for ICT in the country. The political campaign of 'Digital Bangladesh' led by the Bangladesh Awami League (BAL) right before the general election of 2009 became the instrument for reaching out to the mass people in rural Bangladesh (Ministry of Information and ICTs, 2009). The Digital Revolution helped to provide faster and smooth services from the local governmental offices to its service receivers. The successful campaign of Digital Bangladesh was translated into a solid foundation of Digital Bangladesh. The Government of Bangladesh authorities have reached out to district and upazila web portals nationwide following the notable advancements in ICT usage. The government focused on providing ICT facilities and set up the required legislation to reach people from all over the nation in order to make digital amenities available to a wide range of people.

2. Problem Statement

According to recent studies, the United Nations Development Program (UNDP) has provided support of financial and technical resources, and the Government of Bangladesh (GoB) extended its e-services centres at

the Union level throughout the country (Access to Information, 2011). In order to distribute information accumulated by the government, the Union Information and Service Centre (UDC) of 4,501 unions across the country has been made able to reach the same as per requirement (Hauqe and Sarwar, 2015). One of the major goals to provide e-services among the people was to increase interactions between the government and the citizen (Ibid). Secondly, research revealed that local people will benefit from the Union Digital Centre (UDC), aiming to mitigate the gap between the government and the masses, and to promote online governance services in rural areas in Bangladesh. The Government of Bangladesh was inspired to offer e-services to guarantee accountability and openness of government operations. It is vital to note that the Union Digital Centre (UDC) has been a key indicator for the Government of Bangladesh to distribute accurate, reliable, and quality information from governmental, to organizational, to individual levels (Saleheen, 2015).

One of the major aims to provide digital services to the mass people is to make a strong relationship between local government officials and mass people. The digital services are mainly provided by the local governmental officials, i. e., chairman, secretary, Union Parishad member, etc. It is important to mention that the quality of online services largely depends on the working capacity of officials. From a development perspective, the functions of UDC are to promote an e-governance framework for rural people (Saleehin, 2015). In this connection, Union Digital Centre (UDC) plays an important role for the rural people by providing a range of e-services at a lower cost. The rural people expect to have all kinds of offline & online government commercial services from Union Parishad. The effective usage of ICT will potentially extend the operational opportunities of today's public administration required for achieving progress, development, and good governance of the country. Das (2019) showed that the successful implementation of UDC plays an important role to implement e-government in Bangladesh (Das, 2019).

Despite the government's vision for a citizen-friendly, accountable, and transparent administration, the existing local administrative system still faces challenges in achieving these goals. The government functionaries have to be efficient to meet the current needs of the rural people. Digital

services are supposed to reach the masses more easily than traditional government services, which are very time-consuming and expensive. According to a number of studies, contemporary local government employees play a crucial role in giving the public access to useful information. Nevertheless, research has shown that digital functionaries lack the confidence they would like to offer the services. To participate effectively in government projects, current local government employees must possess a particular level of ICT expertise. The government of Bangladesh aims to provide the necessary information to the local government functionaries, which seek the functionaries would have to be effective and efficient in using the ICT tools. Therefore, the basic knowledge and skills on ICT are essentially required.

There are a few studies that have been conducted to explore the necessity of the UDC for providing e-services, vital for the overall development of the country. While some research put emphasis on the technical support provided by the government to the Union digital functionaries, others focused on the availability of the services in the Union Parishad. However, many studies shed light on finding out the existing skills of the union parishad functionaries on the ICT sector-crucial for disseminating government services to the people. It is argued that the local government functionaries are not as much efficient as they should be in order to provide information. As a result, disseminating information among the local people becomes a bit challenging. However, it is still unknown how the local government functionaries receive information, and how they tackle with facing challenges related with ICT. Therefore, the present study will attempt to explore the current skills on ICT among the local government functionaries that are a must for providing the necessary supports to the local people of the country.

3. Objectives of the Study

The paper seeks to address the following specific research objectives:

(i) to reveal the socio-economic profile of the respondents,

(ii) to find out the training support of the ICT that the respondents receive over the period of time,

(iii) to explore the existing ICT knowledge of the informants, and to show the association between the ICT knowledge and the level of satisfaction among the respondents.

4. Review of Relevant Literature

In recent years, the Information and Communication Technology (ICT) based e-Governance services have been playing a significant role in the realm of rural development. Naik et al, (2012) showed that the ICT services are designed to provide digital services to its citizens at their doorsteps in Bangladesh. Like many developing countries, the Government of Bangladesh has launched e- Government services for its rural inhabitants, providing easy access to citizen-improved government services to its citizen (Bhuiyan, 2011). He also demonstrated that the country was awarded with World Summit on Information Society Award-2014, in maintaining the e-government policies, contributing for its efforts to make the Digital Bangladesh Project (Ibid). Misra (2007) and Teicher et al. (2002, p385) claimed that following the government policies, several non-government organizations are also implementing the strategies.

The Union Parishad Digital services aim at providing digital ICT services to the mass (Das, 2015), as several studies claimed that people from rural areas are neglected to get information, partly explained by the

shortages of proper materials in the centre. In this regard, the GoB undertook effective initiatives to reach out information among the rural people across the country, a UDC is such an example in this case. The Union Parishad's functionaries need to have a substantial amount of ICT knowledge, as people in the rural areas seek to get information from the employees. The online tools can be handy, enabling the UDC employees to have the technical skills needed for the smooth delivery of the online services (Das, 2015). Given the necessity of internet services, studies put emphasis on the internet availabilities in the Centre that provide crucial roles to provide the e-services.

According to the World Bank (2008), the use of information technology (such as WANs, the internet, and mobile computing) of government employees makes it possible to connect its citizens, businesses, and other sectors directly. The world Bank report also stated that by providing e-government services, citizen become empowered through access to information, improved interactions with business and industry, or more efficient government management. Palvia and Sharma (2007) argued that enhancing e-government services could benefit residents, businesses, union parishad functionaries, and other government entities that provide 24/7 services. Researchers like Godse and Garg (2007) focused on the required skills of the Union Parishad employees-necessary for the effective running of the public institutions- Union Parishads are not an exception to this case.

Misuraca (2006) highlighted the existing facilities of the governance system, offering and transforming the e-governance system with the idea to facilitate speedy, efficient, and transparent processes, deemed crucial for distributing information to the community and other agencies. (Rao, 2004) added that the e-governance system enhances the base, minimizing

the processing costs, reducing the cycle times, and increasing transparency. Giving emphasis on the digital services in the public functionaries, James (2000) opined that government organizations might work more effectively if their citizens could ensure the e-government systems in a broader spectrum, from filling out forms, paying parking tickets, conducting auctions on the internet, and registering their cars, etc. Along with the developed countries, Heeks (2001) found that developing countries could equally benefit from the e-Governance mechanisms.

With a focus on reducing poverty of the country, Bertot et al. (2010) shed lights on e-governance, which can play a significant role in mitigating corruption and cost-effective service, aiming to deliver to the citizens. Analysing the importance of e-governance at the local, state, and central levels of government, Monga (2008) exhibited that e-governance has brought a revolution, while providing quality of service to the citizens. The digital governance aims at improving transparency, simplifying procedures, saving time, reducing corruption, improving office and record management, etc.

Alias et al. (2011) found some barriers in providing easy to use, secure, cost and language constraint while offering services, in particularly in rural areas. Their studies also demonstrated that organizational hindrance significantly impacts the adoption of local e-government initiatives in the Union Parishad Centres (Nurdin et al, 2011).

Apart from this, studies also pinpointed that e-Governance paved the way to the successful integration of a knowledge-based economy, incorporating technologies in the life of citizens in rural areas (Drljaca and Latinovic, 2012). Iqbal and Seo (2008) stated that the application of e-Governance eliminates corruption and builds an accountable and

transparent Union Parishad system. Additionally, the ICT based Union Parishad service delivery system can be notably improved in the e-government services. The abovementioned research suggests the need of ICTs in the UDC, emphasizing its significant contribution to the overall development of the country's people, particularly in rural area. In such a context, it can be concluded that research have been conducted addressing its contemporary usage both in the urban and rural areas. Only a few studies are seen to demonstrate that the skills and knowledge on using ICT and other relevant digital skills of the functionaries have not amply satisfactory. Therefore, the present study attempts to investigate in the field of UDCs functionaries regarding their knowledge, skills, and expertise in ICT knowledge, which is found to be less studied.

5. Methodology

5.1 Methods/Tools Used in this Study

Research Methodology is a framework that demonstrates the systematic resolution of research problems (Kothari 1990). These can be either quantitative or qualitative, or mixed methods. Quantitative analysis describes phenomena by gathering numerical data interpreted them applying statistical methods (Aliaga and Gunderson 2002). This study applied a range of quantitative methods. Quantitative research is based on real facts and experiments; the use of analytical, statistical, and mathematical methods to obtain the results often requires in such a s method. Quantitative methods helped the researcher to find out that statistical and numerical data. In this research quantitative method will be more appropriate than qualitative method.

5.2 Variables and Measures

In the present study, both 'Dependent' and 'Independent variable' have been utilized to explore the research objectives. The independent variable

has a direct effect on the dependent variable because it possesses the power to control the other variables in the experiment (McLeod, 2019). It is also a type of variable which does not get affected by the other variables and remain unchanged in the experiment (Sarikas, 2018). The present research aims to assess the status of the skills of Information and Communication Technology skills of Local Government functionaries in Bangladesh. The existing skills of ICT and demographic information have been deemed as independent variables, while the level of satisfaction among the functionaries has been considered a dependent variable. In this study, attempts have been made to select some chosen socio-economic information, level of ICT use in discharging official functions and level of ICT skills as independent variables, while the level of satisfaction in the ICT skills have considered as the dependent variable. The study has taken only one variable as dependent; the reason behind choosing the dependent variable is to demonstrate the relationship between the dependent and independent variables-vital for revealing the significant factors.

5.3 Sample Upazilas and Union Parishads

Using a random sampling procedure, the study has chosen ten union parishads from ten randomly selected Upazilas of various districts of Bangladesh. The goal behind selecting these unions and Upazilas is to generalize the results so that they reflect the entire country. The ten Union Parishads are (1) Lahiripara Union Parishad, Bogura Sadar Upazila, BJessor, (2) Gauripur Union Parishad, Daudcandi, Cumilla, (3) Jahanabad Union, Mohanpur Upazila, Rajshahi, (4) Aminbazar, UP, Savar, Dhaka, (5) Gauripur Union Parishad, Sathia, Pabna, (6) Ullapara Union Parishad, Ullapara, Sirajganj, (7) Koira Union, Khulna, (8) Pirganj, Thakurgaon (9) Bhatia Kobirhat, Noakhali (10) Adomdighi Union, Bogura Sadar, Bogura. The study aims to generalize the

information derived from the statistical study in order to represent the data for comparison with the entire nation. The motive was to generalize the research's findings, since each Union Parishad's subject matter is essentially the same. Only ten Union Parishads out of 4574 have been chosen against the backdrop of time and financial constraints.

5.4 Data Collection and Analysis Techniques

At the outset, a structured questionnaire was prepared to conduct the study. With a view to highlighting quantitative findings effectively, a range of statistical tools was selected and used to evaluate the collected data and present the findings in an organized way. The statistical tools which are covered in this study are the frequency test, Chi square correlation test, such as Cramer's V and Phi tests and ordinal logistic regression study in this research. The explanatory and outcome variables are categorical, which motivates to application of those techniques.

5.5 Ethical Considerations

Every attempt was made to maintain utmost honesty, sincerity, and respect in regard to the participants and respondents throughout my study. Oral consent from informants has been obtained before surveying any questionnaire. Details regarding the research objectives were communicated to the respondents, and they were assured that their responses would be held with strict confidence and would remain anonymous. The tape recorder has also been used with the consent of the participants. Before this, a plain language-informed consent was taken from them.

5.6 Piloting the Questionnaire

The structured questionnaire was drafted after carefully reviewing a variety of literature pertinent to the subject matter of the current study. A few pilot surveys were conducted using the drafted questionnaire among a few respondents who were from other union parishads to see whether

the respondents understood it or any amendment was required to make it easy going. In following the process, the final questionnaire was prepared after amended three questions following a few suggestions that were revealed through two piloted respondents.

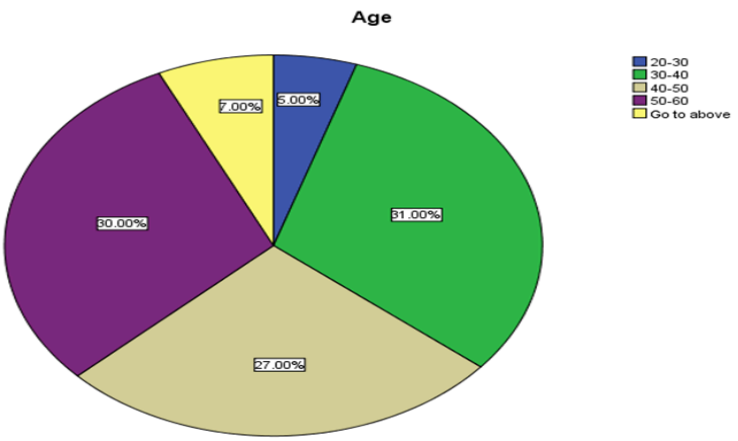
6. Limitations

One of the major setbacks of the study is the small number of Union parishads and the respondents. Since the aim was to generalize the results with the remaining union Parishads and respondents, the small number of respondents might not be indicative of all the populations in the 4974 Union parishads across the country, yet the study can shed light.

7. Data Analysis and Discussion

A. In the discussion section, an attempt is made to reveal the profile of respondents as to age, gender and education, followed by other relevant information.

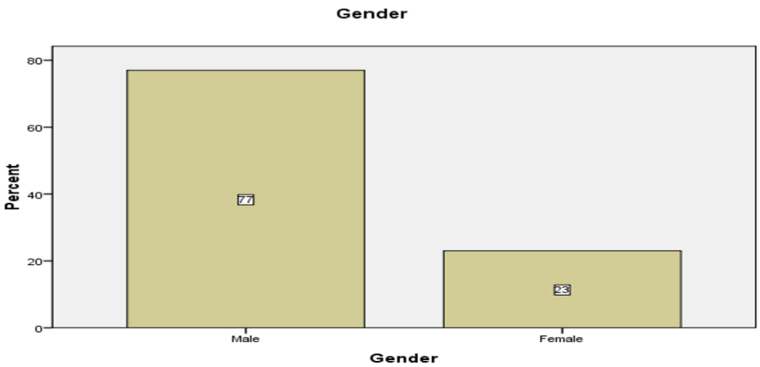
B. **Chart – 1: Age group of the Respondents**



(Source: Fieldwork, 2025)

The above pie chart illustrates that the highest respondents (31%) belongs to the age group of 30-40 years, followed by 30% within 50-60 years, while the lowest proportion of respondents (5%) suggests the age group of 20-30 years.

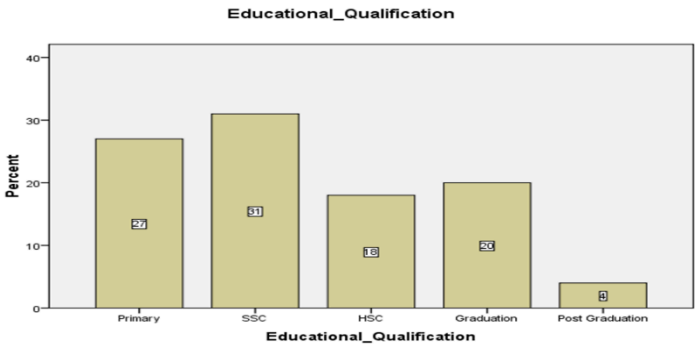
Chart – 2: Gender of the Respondents



(Source: Fieldwork: 2025)

The bar diagram shows that the highest percentage of the respondents (77%) are male, followed by 23% female respondents, indicating that the majority of the participants are male.

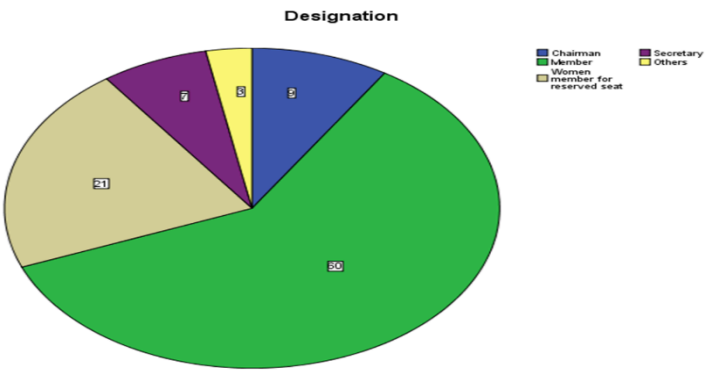
Chart – 3: Education status of the Respondents



(Source: Fieldwork: 2025)

The bar diagram reveals that the highest number of respondents (31%) have completed SSC (Secondary School Certificate), followed by 27% with primary education, while the lowest proportion (4%) have completed post-graduation.

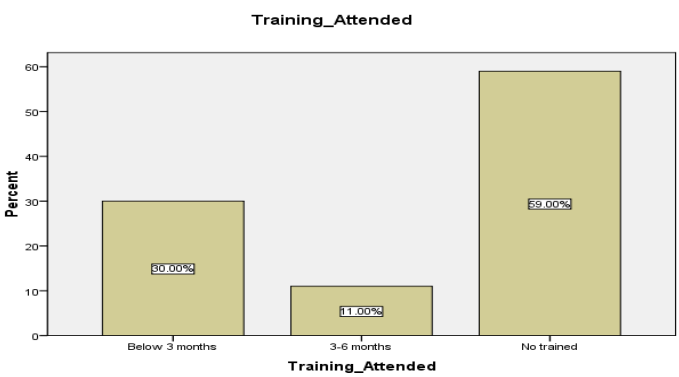
Chart – 4: Post-holding position of the Respondents



(Source: Fieldwork: 2025)

The pie chart shows that the highest ratio of respondents (60%) are Members, followed by 21% who are Women Members of reserved seats, while the lowest ratio (3%) represents those holding other designations.

Chart– 5: Training Status of the Respondents

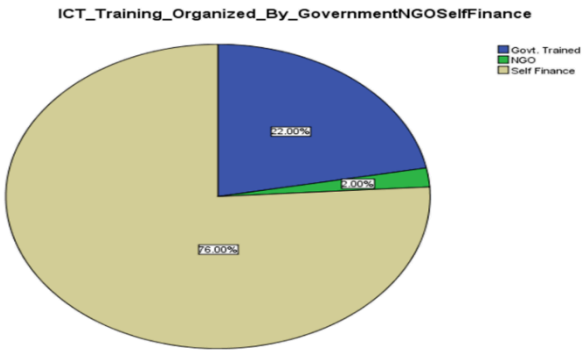


(Source: Fieldwork: 2025)

The bar diagram illustrates that the highest ratio of the respondents (59%) have received no training, followed by 30% who have attended

training below three months, while the lowest ratio (11%) have received training for three to six months.

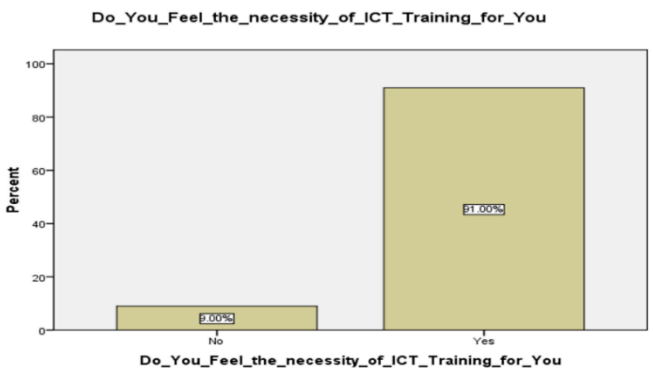
Chart – 6: Financing for Training of the Respondents



(Source: Fieldwork: 2025)

The pie chart indicates that the highest proportion of the respondents (76%) have received self-financed ICT training, followed by 22% who received government-funded training, while the lowest ratio of respondents (2%) were trained by NGOs.

Chart– 7: Opinion as to Effect of Training



(Source: Fieldwork: 2025)

The bar diagram reveals that the highest number of respondents (91%) believe training has a significant positive effect on improving their performance, while the lowest proportion (9%) feel that training has little or no effect on their work efficiency.

C. **Information About the Level of ICT uses in Discharging Official Functions**

An attempt was made to know from respondents as to level of the types of ICT skills to which they are skilled. Following table depicts the picture.

Table no 1: Level of ICT uses in discharging official Functions:

Level of ICT uses in Official Functions	Level	Percentage (%)
Computer literacy	Yes	52
	No	48
Year of Computer use	Less than 1 year	65
	1-2 years	18
	2-3 years	7
	3-4 years	4
	5 years to above	6
Access to Computer	Yes	50
	No	50
Access to internet	Yes	50
	No	50
Year of Internet uses	5 years and above	7
	3 to 4 years	14
	1 to 2 years	30
	Less than 1 year	49
Frequency of internet use	Every working day	29
	Few times in a week	29
	Once a week	14
	Never	28
Use of social media	Yes	30
	No	70
Use of email	Every working day	20
	Few times in a week	15
	Once a week	20
	Never	45
Use of e-filing	Every working day	13
	Few times in a week	14
	Once a week	12
	Never	61
Computer training attended	Formal training	13
	Informal training	20
	Never	67
Internet1 training attended	Formal training	13
	Informal training	20
	Never	67
Use of device	Computer/Laptop/Android	80
	No	20

(Source: Fieldwork, 2025)

The above table highlights significant barriers related to access, experience, and adoption of ICT tools. Nearly half of the respondents

(48%) are not computer literate, and access to both a computer and the internet stands at a concerning 50% of Yes/ 50% 'No split'. This foundational barrier limits the potential for digital government. Again, the workforce is heavily inexperienced, with the highest percentage (65%) reporting computer use for less than 1 year. Even internet use is relatively recent, with the largest group having 1 to 2 years (30%) of experience. Moreover, there is a strong reliance on email, with 20% reporting daily use. However, modern e-governance tools are largely ignored; 61% never use e-filing, indicating that the transition to paperless processes is stalling at the local level.

Table 2: Levels of ICT Skills

Variables of ICT Skills		Percent
Word processing Skill	Excellent Skills	5
	Good skills	10
	Fairly Skilled	17
	Low level skilled	29
	No skill	39
Internet browsing/downloading skills	Excellent Skills	3
	Good skills	6
	Fairly Skilled	11
	Low level skilled	30
	No skill	50
E-mailing Skill	Excellent Skills	3
	Good skills	4
	Fairly Skilled	7
	Low level skilled	26
	No skill	60
E-filing systems skill	Excellent Skills	4
	Good skills	4
	Fairly Skilled	6
	Low level skilled	16
	No skill	70
Use of presentation tools	Excellent Skills	4
	Good skills	4
	Fairly Skilled	6
	Low level skilled	16
	No skill	70

(Source: Fieldwork, 2025)

The table quantifies the skills deficit, showing that the majority of the officials lack proficiency in essential digital tasks. In all five skill categories, the combined total of "No skill" and "Low level skilled" far outweighs the proficient categories ("Good" and "Excellent"). For instance, in E-filing systems, 86% of respondents fall into the lowest two categories, directly corresponding to the low usage rates observed in Table1. This pervasive skill gap confirms the urgent need for foundational and task-specific training.

D. Correlation Analysis between the Union Parishad functionaries' ICT skills and level of Satisfaction

Table 3: Summary Table of Socio-demographic profile of the Respondents:

Socio-demographic Factors	Value of functionaries' satisfaction
Age	Cramer's V=.374*
Gender	Phi=.110
Educational Qualification	Cramer's V=.162
Official designation	Cramer' V= .315*
Training Attended	Phi=.344**
ICT training organized	Cramer's V= .810
Union Parishad organized training	Phi=.243
Necessity of ICT training	Phi=.202
For the nominal level variables, Cramer's V (for larger than 2x2 cross table) and (for 2x2 cross table) tests are used, * Significant at 0.01 level and ** refers to 5% level of significance	

(Source: Data analysis, 2025)

The analysis shows that satisfaction is not uniform across demographic groups. The Union Parishad organized training (Phi=.243) shows the strongest association in the entire study. Training provided by the local authority has the most substantial link to functionary satisfaction, suggesting that involvement in localized, official training is critical. Again, age (Cramer's V=.374*) and educational qualification (Cramer's V=.162) both have a moderate association, implying that satisfaction varies based on these factors and that training and support may need to be tailored to different age and education groups.

Table 4: ICT skills used in discharging official functions, level of ICT skills, and level of Satisfaction:

Skills-related variables against satisfaction have been further evaluated, and the results can be seen from the table below.

Level of ICT uses in Official Functions	Values of functionaries' satisfaction	Level of e-filling applications	Values of functionaries' satisfaction
Computer literacy	Phi=.236	Word processing skill	Cramer's V=.368*
Year of Computer uses	Cramer's V=.265	Internet browsing/downloading skills	Cramer's V=.336*
Access to Computer	Phi=.101	e-mailing skill	Cramer's V=.420*
Access to internet	Phi=.44**	e-filling system skill	Cramer's V=.311*
Year of Internet uses	Cramer's V=.211	Use of presentation tools	Cramer's V=.401*
Frequency of internet use	Cramer's V= .211	For the nominal level variables, Cremer's V (for larger than 2x2 cross table) and (for 2x2 cross table) tests are used, * Significant at 0.01 level and ** refers to 5% level of significance	
Use of social media	Phi=.127		
Use of email	Cramer's V=.301		
Use of e-filling	Cramer's V=.220		
Computer training attended			
Internet training attended			
Use of device	Cramer's V=.232		

This table confirms that possessing specific, functional skills is more strongly related to satisfaction then general literacy. E-filing system skill (Cramer's V=.311) shows a strong association with satisfaction, second only to UP-organized training variable. Improving competency in e-filing would likely yield high returns in both government efficiency and job satisfaction. E-mailing skill (Cramer's V=.420) also suggests a moderate-to-strong association. Given the high frequency of email use (Table 01), improving proficiency here leverages an already adopted tool. Moreover, Access to internet (Phi=.44) variable also reflects a moderate association, confirming that the fundamental act of providing internet access is a necessary step towards improving morale.

Ordinal Logistic Regression

The study administered ordinal logistic regression and got dependent variable as Likert scale with ordinal measurement, and independent variable with continuous measurement scale. Therefore, in our study, the outcome variable or

level of satisfaction is ordinal data, and the outcomes variable or independent variables are categorial.

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	159.199			
Final	117.208	41.991	24	.013

Link function: Logit.

The model Fitting Information contains the 2 log Likelihood for an intercept only (or null) model and the Full Model (containing the full set of predictors). The study, moreover, has run a likelihood ratio chi-square test whether there is a significant improvement in fit of the Final model relative to the Intercept only model. It is found that a significant improvement in fit of the final model over the null model (Chi square=41.991, p value is .013 which refers p<.005).

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	152.981	255	1.000
Deviance	113.625	255	1.000

Link function: Logit.

The 'Goodness of Fit' table contains the Deviance and Pearson chi square tests, which are useful for determining whether a model exhibits good fit to the data. Non-significant test results are indicators that the model fits the data well (Petrucci, 2009 and Field, 2018).

In the analysis, it is found that both the Pearson chi square test (Chi-square=152.98, P=1.000) and the deviance test (chi-square=113.625, p=1.000) were non-significant. These results recommend good model fit.

Pseudo R-Square

Cox and Snell	.796
Nagelkerke	.986
McFadden	.965

Link function: Logit.

These are pseudo-R square values that are treated as rough analogous to the R square value is Ordinal Logistic regression (OLS). In general, there is no strong

guidance in the statistics literature on how these should be used or interpreted. As such, I supposed that one should interpret these with caution.

The analysis of the coefficients revealed that after controlling for the other independent variables, three factors demonstrated a significant predictive relationship with the outcome – computer literacy, year of internet use, use of e-mail. The study interpreted a positive estimate in the following way: for every one unit increase in computer literacy, there is a predicted increase of -7.18 in the log odds of a Union Parishad functionary being in a higher category. The coefficient model showed that three explanatory variables have found significant predictor in the model, these are computer literacy, year of internet uses and use of email. Other explanatory variables were not found as significant.

Test of Parallel Lines[b]

Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Null Hypothesis	.000			
General	.000[a]	.000	132	1.000

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

The Ordinal Logistic Regression (OLR) reveals that the relationship between the explanatory variables are the same across all possible comparisons, involving the outcome variable- an assumption referred to as proportional odds. The assumption of proportional odds indicates non-significance, which mention that the assumption is satisfied. The statistical significance is revealed as an indicator that the assumption is not satisfied.

From the test of parallel lines, the model showed that the result of the assumption is satisfied as P value is 1.000.

8. Conclusion and Recommendations

The study has assessed the degree of satisfaction of UP's employees in regard to have the necessary proficiency on ICT. The research identifies a number of exceptional factors that are relevant to respondents' socio-demographic information, level of ICT uses in discharging official functions, and their degree of ICT proficiency. In the opening part of the evaluation, the paper has shown the percentages of each category of questions answered by the respondents. In

the process, the study has created two tables that showed the percentages of respondents in each independent question.

The second part of the evaluation of this study has presented a chi square correlation analysis between explanatory and outcome variables. The study has taken into consideration the chi-square test since the data set is categorical; hence, Cramer's V and Phi values have been obtained. At 1% and 5% levels of significant, the study showed that a few explanatory variables have found significant associations with outcomes variable. The important explanatory factors are respondents' age, training attended, access to the internet, word processing skill, internet browsing and e-mailing skill, e-filing systems skill, and use of presentation tools.

In the third stage, this study administered an ordinal logistic regression analysis, as the study considered the outcome variable as an ordinal scale and the explanatory variables as categorical variables. In the model fitting information, the chi-square value is 41.991, where P value is .013, referring to $p<.005$. In the 'Goodness of Fit' model, it was found that both the Pearson chi-square test (Chi-square=152.98, P=1.000) and the deviance test (chi-square=113.625, p=1.000) were non-significant. These results recommend a good model fit. In the coefficient analysis, the study found that three explanatory variables were found to be significant predictor in the model, these are computer literacy, year of internet uses and use of email. Other explanatory variables were not found as significant. Finally, in the test of parallel lines, the model showed that the results of the assumption are satisfied as P value is 1.000.

The study's recommendations are a direct response to the access or skill gaps and the correlation findings:

1. Standardized Infrastructure and Technical Support: Establish standardized ICT infrastructure and dedicated technical support at the Union Parishad level. This is intended to increase the efficiency and capacity of staff and build confidence among officials in using technology.

2. Increased Local ICT Awareness and Use: Implement initiatives to boost ICT use and general awareness among the populace at the local level.
3. Local Languages Accessibility for the Public Services: Ensure that information regarding public services is made more accessible in local languages to facilitate wider understanding and usage.
4. Targeted Public Awareness Campaigns: Deliver advertisements and public news releases designed to engage all demographics (including those across class, age, and gender) to increase public awareness regarding crucial ICT training.
5. Effective Cooperation: Acknowledges that successful e-governance requires systematic change and coordination between technical implementers (UDC) and local authorities to address the high rate of non-use of e-filing (Table 01).
6. Develop and Maintain Accessible Digital Portals: Union Parishad digital portals must be properly developed, updated, and maintained with a focus on disability-friendly access, secure hosting, and a simple, user-friendly design to ensure easy and equitable access to information for all citizens.

References

Afsar, R. (2010). Poverty, inequality and the challenges of pro-poor governance in Bangladesh. *Journal of South Asian Development*, 5(2), 187–219.

Alias, E.S., Idris, S.H.M., Ashaari, N.S. & Kasimin, H. (2011) Evaluating e-Government Services in Malaysia using the EGOVSAT Model. In the International Conference on Electrical Engineering and Informatics, Bandung, Indonesia, 1-5.

Bangladesh, The Local Government System in Bangladesh, Country Profile 2017-18, http://www.clgf.org.uk/default/assets/File/Country_profiles/Bangladesh.pdf

Bhuiyan, S.H. (2011) Modernizing Bangladesh Public Administration through E-governance: Benefits and Challenges. Government Information Quarterly, 28, 1, 54-65.

Bertot, J.C., Jaeger, P.T. & Grimes, J.M. (2010) Using ICTs to Create a Culture of Transparency: E-government and Social Media as Openness and Anti-corruption Tools for Societies. Government Information Quarterly, 27, 3, 264-271.

Center for Research and Information, 2017. Bangladesh Digital Revolution, Mirpur, Dhanmondi, Bangladesh

Das, 2019. The Role of Union Digital Centre to Ensure People's Participation at Sylhet Sadar, Bangladesh, *Review,* Volume 7, Issue 1

Drljača, D. & Latinović, B. (2012) E-Governance in Republic of Srpska-Challenges and Prospects. Quality of Life (Banja Luka)-APEIRON, 5, 1-2, 32-40.

Faroqi, M. G. (2014). Reaching the unreached? An assessment of Union Information and Service, Centres (UISC) in Bangladesh from beneficiary perspective. Proceedings of the Australian Academy of Business and Social Sciences Conference 2014. Retrieved 13 November 2014,

from https://www.aabss.org.au/research-papers/reaching-unreached-assessment-union-information-and-service-centres-uisc-bangladesh

Godse, V. & Garg, A (2007) From E-government to E-governance. In Proceeding of the 5th International Conference on e-Governance, Hyderabad, India, 28-30 December.

Heeks, R. (2001) Understanding E-governance for Development. i-Government Working Paper Series, Paper No. 11, Manchester, UK: IDPM, University of Manchester.

Hoque and Sarwar, 2015. ICT BASED E-GOVERNMENT SERVICES FOR RURAL DEVELOPMENT: A STUDY OF UNION INFORMATION AND SERVICE CENTER (UISC) IN BANGLADESH, *Electronic Journal of Information Systems in Developing Countries* · November 2015 DOI: 10.1002/j.1681-4835.2015.tb00517.x

Harande, Y.I. (2009) Information Services for Rural Community Development in Nigeria. *Library Philosophy and Practice*, 271: http://digitalcommons.unl.edu/cgi/viewcontent .cgi?article=1276&context=libphilprac.

Iqbal, M.S. & Seo, J.W. (2008) E-Governance as an Anti-Corruption Tool: Korean Cases. http://www.karis21.or.kr/karis21admin/adaction/down/03Iqbal_Seo.pdf

James, G. (2000) Empowering Bureaucrats. MC Technology Marketing Intelligence, 20, 12, 62-68.

Kothari, C. R. (2004). *Research methodology method & techniques*. New Delhi: New Age International (P) Ltd. Publishers.

Khan, D. A. A., & Rahman, M. M. (2024). Factors influencing the acceptance of articles submitted for publication in the Journal of Business and Development Studies (JBDS). *Journal of Business and Development Studies*, 3(1). https://doi.org/10.5281/zenodo.14829655

McLeod, S.. (2019). *What are Independent and Dependent Variables?* I *Simply Psychology, Simply Psychology.* Available at: https://www.simply psychology.org/variables.htm l (Accessed: 4 January 2020).

Misra, D.C. (2007) Select Aspects of Conceptual Foundations of E-government: Clearing the Fog for a Better Vision. In 5th International Conference on e-Governance, Hyderabad, India, 28–30 December.

Misuraca, G (2006) e-Governance in Africa, from Theory to Action: A Practical-Oriented Research and Case Studies on ICTs for Local Governance. In International Conference on Digital Government Research; ACM: New York, USA; 151, 209-218.

Ministry of Science and ICT (2009). National Information and Communication Technology Policy, 2009, Ministry of Science and ICT, Government of Bangladesh, July 2009

Monga, A. (2008) e-Government in India: Opportunities and challenges. Journal of Administration and Governance, 3, 2, 52-61.

Naik, G., Joshi, S. & Basavaraj, K.P. (2012) Fostering Inclusive Growth through Egovernance Embedded Rural Telecenters (EGERT) in India. Government Information Quarterly, 29, S82-S89.

Nurdin, N., Stockdale, R. & Scheepers, H. (2011) Understanding Organizational Barriers Influencing Local Electronic Government Adoption and Implementation: The Electronic Government Implementation Framework. Journal of Theoretical and Applied Electronic Commerce Research, 6, 3, 13-27.

Palvia, S.C.J. & Sharma, S.S. (2007) E-government and E-governance: Definitions/Domain Framework and Status around the World. In International Conference on Egovernance, Hyderabad, India, 28–30 December.

Rao, T.R. (2004) ICT and e-Governance for Rural Development. Center for Electronic Governance, Indian Institute of Management, Ahmedabad.

Sarikas, C. (2018). *Independent and Dependent Variables : Which Is Which? Prep Scholar* .Available at: https ://blog.prepschol ar.com/independent-and-dependent- variables (Accessed: 1 January 2020).

Saleheen ,S. 2015, Public Service Delivery- Role of Union Digital Center

(UDC) and Impact on Improving Governance and Development: A Case Study of Narayanganj District, Bangladesh

Shore, L. & McAnany, E. G. (1980) Mass Media for Development: A Re-examination of Access, Exposure and Impact. In: Shore, L. (Ed) Communications in the Rural Third World. The Role of Information in Development, Praeger, New York: 19-45.

Teicher, J., Hughes, O. & Dow, N. (2002) E-government: A New Route to Public Sector Quality. Managing Service Quality, 12, 6, 384-393.

WB (2008) Definition of E-Government. World Bank, http://web.worldbank.org/WBSITE/EXTERNAL/.

Declaration of Interests: We, the authors of this research manuscript, declare that we have no financial interest. We have provided written consent to publish the paper in this journal.