

A Probe Into E-Government Services In Rural Bangladesh: The Case Of Union Digital Centers (Udcs)

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Abstract

One stated and repeatedly emphasized goal and commitment of the government is to decentralize public service delivery through the provision of ICT based e-services in rural areas of Bangladesh under the auspices of the Union Digital Centers (UDC). In this context, this study delves into the role and performance of UDC in light of selected variables and associated indicators - such as Impact on citizens' behavioral pattern, Infrastructure & Logistics in UDC, Efficient Service Delivery in UDC, Reduction of Corruption, and Satisfaction level of Entrepreneurs. A qualitative research approach was deployed for the purpose of investigating into the research objective. The research tools included Review of secondary literature, Sample survey administered through a semi-structured questionnaire, a purposely designed Assessment scale and Personal observation. One core finding of the study reveals and corroborates that the government's commitment for initiating widespread digital development has so far been reasonably well received and materialized in the study areas through the UDC operations, and remained consistent with the approved ICT policies. The study has identified the key challenges (such as the inadequacy of infrastructural and logistics support and backstopping) that thwart the process of maximizing the development potential of UDC. The evidence also suggests that the Public Private Partnership model is yet work in full swing, and the current level of income generation of the entrepreneurs is not satisfactory. The article furnishes some policy and functional recommendations, and concludes with an exhortation for further research on this interesting area of study.

Key words: UDC, ICT, Digital Bangladesh, e-Service, e-Governance

Background

Decentralization of public service delivery and bringing the services to the doorsteps of the common millions constitute a fundamental development agenda of the present (Awami League) government. In following this agenda, the Access to Information (a2i) Programme of the Prime Minister's Office—with technical and financial support from UNDP and USAID—has set up some 4554 one-stop information and service delivery outlets known as Union Digital Centers (UDCs) in all union councils- the lowest tier of the local government structure in Bangladesh (a2i, 2017).

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UDCs pledge to offer the rural people access to important information and services. A typical UDC is situated about 4 km from the average rural citizen's home whereas a government Upazilla (sub-district) level office is about 20 km. UDCs are essentially micro-enterprises run by 'citizen entrepreneurs'—one female and one male with local government representatives. UDC usually provides two types of services—free and fee-based like land records, birth registration, telemedicine, passport and overseas job application as well as application to various other government services and private services like mobile financial services, insurance, various types of computer and vocational training, etc.

The UDCs model was innovatively designed in public-private entrepreneurship model to bring the model and infrastructure of the public sector coupled with entrepreneurial zeal and efficiency of the private sector. The UDC is situated in Upzaila Parishad building. The UDC receives 1% of the total ADP budget for its logistics support whereas everyday expenses are borne by the entrepreneurs who generate revenue by selling public and private services.

In the above backdrop, this study focuses on the role and performance of UDC against its protagonists' claim as a 'pro-people e-Government service delivery model'. More specifically, the key objective of this study is to examine the performance of the studied-UDCs in light of the following variables and associated indicators: Impact on citizens' behavioral pattern, Infrastructure & Logistics in UDC, Efficient Service Delivery in UDC, Hassle free service delivery, Reduction of Corruption, Satisfaction level of Entrepreneurs (explained further in the Analytical framework and Methodology sections).

The article is organized into seven sections. After setting the scene in this section, the next section provides a review of the selected key literature on the subject. The third section then proffers the description of the Case together with the Analytical framework and Methodological considerations of the study. The major findings and observations are presented in the fourth section. The fifth section delve into the key challenges of UDC, while some recommendations are furnished in the sixth section. The epilogue is presented in the seventh section, and the paper concludes with an exhortation for further research on this interesting area of study.

Literature Review

Of late there has been unprecedented enthusiasm and interest in Bangladesh about e-Government services as a means of rural development (Heeks et al 2009; Drucker, 2001). As part of intense interventions and activities towards promoting e-Government services, the Union level information and service stations – the government owned micro-enterprises, popularly known as Union Digital Centers (UDCs) - have been working as one-stop information and service delivery outlets since 2010 across all Union Parishads. It has been argued that “the depth and

breadth of PPP around UDCs is unprecedented in Bangladesh's development history" (Census Report on UDC, 2014, p-1).

The terms e-Government and e-Governance are often used to describe a government's use of Information and Communication Technology (ICT) to render services to its citizens. Within the research community there is a debate on the correct use of these two terms. Drucker (2001) defined the term e-Governance as the use of emerging information and communication technologies to facilitate the processes of government and public administration whereas e-Government can be well-defined as the use of information technology to support government operations, engage citizens, and provide government services (West and Wind, 1996).

Heeks et al (2009, 2010) found that e-Governance brings benefits to developing countries (Chile, Philippines, Honduras, and South Korea) by making governance more effective and efficient. The e-Governance can play a significant role for poverty reduction, corruption control and can provide cost-effective service delivery to the citizens (Bertot et al, 2010). Monga (2008) noted that the e-Governance enhances the quality of service delivery by cultivating transparency, simplifying procedures, saving time, improving office and record management systems. In the same vein, Hoque et al (2015) argued that ICT is applied to improve results in productivity, increase efficiency of operations and effectiveness, strengthen management and administrative functions, progress market performance and increase business competitiveness in developing countries.

The implications for ICT in terms of disadvantaged regions (e.g. rural frontiers, difficult or inaccessible terrains) remain a matter of debate in the literature. It is often argued that rural areas are least influenced by the latest advances in the "digital revolution". The high cost of access to information and infrastructure affect the equitable distribution of information in rural areas, however, technological advancements in ICTs have reduced the cost and increased the quantity and therefore, speed of the transfer of information dramatically improved (Chapman et al, 2002). According to Okiy (2003) "rural development is a basis for economic development and information is an important ingredient in development process. People in rural areas whether literate or not should have access to any kind of information which will help them to become capable and productive in their social and political obligations, to become better informed citizens generally".

Now the question is what ICT can do for an emerging country like Bangladesh. Recently, the inequality level in Bangladesh continues to remain a matter of grave concern; particularly rural inequality is on rise. According to Gini scale of inequality measurement, rate of inequality has increased from 0.451 in 2000 to 0.467 in 2005, generally because of increasing rural inequality (HIES, 2005). It is argued that the access to information and widespread e-Government services in rural settings may help reducing the gap between rich and poor (Akter and Georgsen 2012; Hoque et

al, 2015).By comparing the alternative service providers, Faruqi (2015) also stated that UDC based service delivery has potential to reduce time, distance and cost (TVC) in service delivery and it may contribute to bridging the digital gap between rural and urban segments. At this point, it is worthy to mention that there are three types of Digital Divide: the first-level is the inequality of access to IT, the second-level is inequality of capability to exploit IT and the third level is the inequality of outcomes (Wei et al, 2011).

According to Hoque et al (2015) Development can only be effective if rural citizens have access to the information for their day-to-day activities. In recent years, e-governance project in rural areas plays an important role to access to the relevant information and transformation of local government services. It improves the efficiency of government information, reduces cost, increases transparency, and ensures quality of service (Al-Hujran, 2011). Considering this view, UDC is an important initiative taken by the present government of Bangladesh. It provides precise, dependable and quality services to the unreached in remote places of the country. In recent days, many scholars have conducted studies regarding the implementation and success stories of the UDCs. However, questions still remain to what extent this PPP model contribute to the rural development? Or reaching the unreached is a myth or reality? Unfortunately, there are few reports and publications describing the real scenario of the effectiveness of UDCs. Most of them tells us the story of a few success stories of rural people. Therefore, the aim of this study was to examine the impact of e-government services provided through UDCs and its impact on socio-economic development of rural areas of Bangladesh. So, literatures related to this topic has the gap in defining the role and the functionality of the UDCs for rural development. Moreover, this study also generates important lessons and observations that may illuminate the national policies and decisions of the bureaucrats on the subject.

After this general introduction, the second section offers an overview of the study case (UDC) and methodological considerations of the study to formulate the analytical framework. The third section summarizes the key findings and observations of the research from two complementary perspectives: that of the service users (beneficiaries) and of the service providers or entrepreneurs. The major challenges and obstacles that restrict the maximization of the potential of UDC as a means of e-Government services for rural development are identified in the fourth section. It also indicates some possible ways of improving and overcoming these challenges. Lastly, this article closes with an exhortation to further research in this interesting and less-explored area of study.

The Case, Analytical Framework & Methodological Considerations

The government formally inaugurated Union Digital Centers (UDC) in 4,501 Union Parishad on November 11, 2010. UDC is designed to act as a one-stop service outlet

located at UPs and is operated in line with the principles of Public Private Partnership (PPP) instead of donation dependent models. Over 9002 entrepreneurs including 50 percent women are working with UDCs (Asad, 2011). UDC serves as an information and community center to improve living conditions and the quality of life among the rural community. The government has established Union Digital Centers (UDC) to gear up the pro-poor ICT benefits by bringing fundamental changes in rural people. UDCs have the potential to benefit the rural people who do not otherwise have access to information (Akther and Georgsen, 2003). UDC delivers information and technological support to the rural people regarding agriculture, telemedicine, education and job market and provides ICT-training, photocopy and printing service and webcam support for better communication (Habib et al, 2013).

Table 1: Union Digital Center (UDC) at a Glance

Total UDC	4547 in 4547 Union Parishad (UP)
	407 in 11 City Corporation
	321 in Municipalities
Service Provided	50 million Citizen
	70 million Birth Registration
	0.1 million received Computer literacy
	500+ provide health facility
	Over 2 million registered for foreign employment
	3008 UDC providing mobile banking facility. Over 90 thousand received m-banking
Total Entrepreneurs	9,094 (Both male and Female)
Income	1.4 billion (17.96 million USD) per year

(Source: Digital Bangladesh, e-Service for all Report, A2i, 2015)

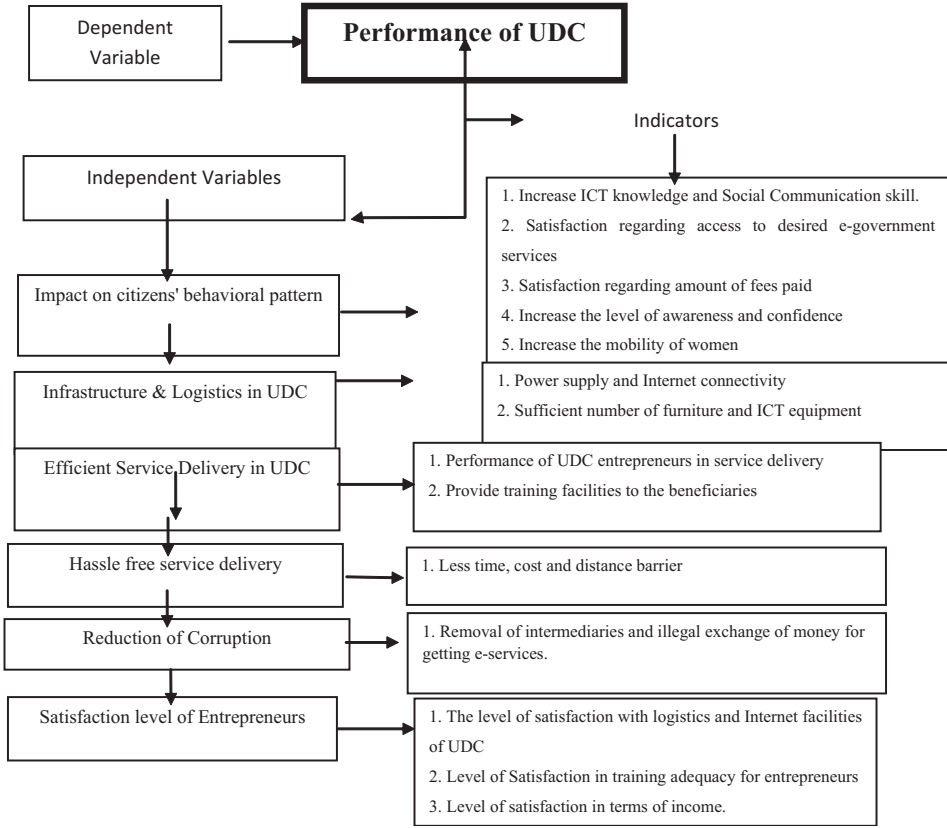
Total member	14,536+
Total blog post	0.16 million
Daily blog post	200-300
Status of Member	UDC entrepreneurs, Govt officials, MP, Minister

(Source: Digital Bangladesh, e-Service for all Report, A2i, 2015)

Towards an Analytical Framework of the Study

Exploring the impact of UDC is a herculean task - given the possible diverse perspectives and mammoth coverage of the subject. An analytical framework has therefore been considered imperative to conduct the study and articulate the findings. Based on selected literature, an attempt has been made to develop a conceptual framework that guided the fieldwork and subsequent analysis done by the researchers. In the main, six independent variables were identified to gauge the impact and functionalities of UDC (see Figure 1).

FIGURE 1: The Conceptual Framework of the Study



(Source: Developed by the authors)

Rationale for selecting Study Areas

In most qualitative research studies, researchers study a specific issue or phenomenon in a certain population or ethnic group of a focused locality in a context and therefore, try to generalize the result to a larger population, however, generalizability of qualitative research findings is usually not an expected attribute (Leung, L, 2015). The study purposely focused on six Upazillas (sub-districts) spanning over two districts—Gazipur and Jessore. The sub-districts are: GazipurSadar, Kapasia and Shripur of Gazipur district and JessoreSadar, Jhikorgacha and Bagherpara of Jessore district. In the journey of making Bangladesh digital, Jessore had been the first district to be declared “digital” in delivering government services. It also happened to be the first district in terms of the establishment of UDCs. The study therefore intentionally focused on Jessore to examine the performance of its UDCs that have been delivering services over longer

period to come into more accurate results of this study. On the other hand, Gazipur district is carefully selected to know the performance of the UDCs of a better-quality district. Based on it, the researchers intend to get an overview of the performance of UDC in other better or less-quality districts. This is a technique purposely adopted by the researchers to apply result of the study to the population at large. Relevant contextual information of the study-Upazilasis presented in the following tables:

Table 3: Contextual Data of Three Upazillas in Gazipur District

Name of Upazilla (Sub-District)	Land Area (Hctr)	Population	Density (per km)	Occupation	Average income (BDT)	Geographical Area (Sq km)
GazipurSadar	43363	1,94,298	1211	Agriculture	250	141.19
Kapasia	88213	3,21,454	900	Agriculture	250	356.98
Shripur	46,227	4,92,792	1060	Agriculture	200	465.25

Data source: Bangladesh Web Portal and BBS District Statistics, 2011

Table 4: Contextual Data of Three Upazillas in Jessore District

Name of Upazilla (Sub-District)	Land Area (Hctr)	Population	Density (per km)	Occupation	Average income (BDT)	Geographical Area (Sq km)
JessoreSadar	43,512	6,15,903	1020	Agriculture	200	435.40
Jhirkorgacha	60,470	2,71,710	800	Agriculture	200	308.08
Bagherpara	1690.61	2,16,897	797	Agriculture	150	271.99

Data source: Bangladesh Web Portal and BBS District Statistics, 2011

Methodology

The main tools of the empirical investigation included (i) secondary literature review; (ii) official documents survey (notably documents from the relevant ICT project based at the Prime Minister’s Office; (iii) Informal Interviews with the targeted beneficiaries in a “story telling” mode. Later, the researchers converted the transcript into stories to analyze them by using “Most Significant Change” (MSC) technique to get the common and significant themes emerging from the analysis of individual participants. For analyzing the stories, during the interviews, with open-ended questions, the participants were encouraged to express their experiences related to the UDC interventions from a user perspective.; (iv) A semi structured questionnaire survey considering two group of respondents, two sets of questionnaires have been formulated: one set is dedicated to collect data from beneficiaries, while the other set addressed the entrepreneurs; (v) Personal Observation.

Sample Size

The study purposely selected (72 male and 28 female)100 respondents. All of them are inhabitants of the locality and users of UDC on regular basis. A sample size of 100 was chosen for this study.

Data Analysis

The data analysis involved converting the transcripts of the interviews into story form, a thematic analysis of each participant’s story, and an integrative analysis of the overall, common and significant themes emerging from the analysis of the individual participants’ stories (Braun and Clarke 2006). Based on the key themes,the relationship is identified through content analysis. Moreover, five representative stories of five key contexts were developed from the transcripts of the interview. All content analysis was done manually.

An interpretive approach through a case study method was used by the researchers that allows to focus on the issues of ICT and its influence and impact on the development of rural areas of Bangladesh. The study applied the“Most Significant Change” (MSC) technique which was proposed by Harris and Tarawe (2009). MSC technique is reported to be suitable for quantitative indicators as it involves regular collection and participatory interpretation of “stories” about changes (Davies and Dart, 2005). In this manner, Willetts (2007) argued that stories deliver the true essence of to human intelligence which can define relationships, sequence of events, cause and effect etc. that are relevant to research.

Construction of Five-Point-Measurement-Scale

The following five-point-measurement-scale was constructed for analyzing data from questionnaire survey for assessing the impact of the services delivered on people of selected study areas.

Table 5: Five-Point-Measurement-Scale

Performance of UDC (Based on Independent Variables)						
Scale	Impact on citizens' behavioral pattern	Infrastructure & Logistics in UDC	Efficient Service Delivery in UDC	Hassle free service delivery	Reduction of Corruption	Satisfaction level of Entrepreneurs
1	Not at all	Very Poor	Very Poor	Not at all	Very Low	Very Poor
2	Minimum	Poor	Poor	Low	Low	Poor
3	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
4	Significant	Sufficient	Efficient	Reduced	Reduced	Satisfied
5	Very Significant	Very Sufficient	Highly Efficient	Highly Reduced	Highly reduced	Highly Satisfied

Other Information

The researchers conducted questionnaire survey based on six independent variables and fourteen indicators according to the conceptual framework of the study. Each variable is measured by setting some indicators in five-point-measurement-scale. The list of variables and pertinent indicators are given below in the Tab. 6:

Table 6: List of Variables and Measurement Indicators

SL	Variable	Indicator
1	Impact on citizens' behavioral pattern	a. Increase ICT knowledge and Social communication skill b. Satisfaction regarding access to desired e-government services c. Satisfaction regarding amount of fees paid d. Increase the level of awareness and confidence e. Increase the mobility of women
2	Infrastructure & Logistics in UDC	a. Power supply and Internet connectivity b. Sufficient number of furniture and ICT equipment
3	Efficient Service Delivery in UDC	a. Performance of UDC entrepreneurs in service delivery b. Provide training facilities to the beneficiaries
4	Hassle free service delivery	a. Less time, cost and distance barrier
5	Reduction of Corruption	a. Removal of intermediaries and illegal exchange of money for getting e-services.
6	Satisfaction level of Entrepreneurs	a. The level of satisfaction with logistics and Internet facilities of UDC b. Level of Satisfaction in training adequacy for entrepreneurs c. Level of satisfaction in terms of income.

Demographic Profile of The UDC Users/Beneficiaries

A snapshot of socio-economic background of the participants is presented in Tab.7.It indicates that 24% participants were farmers with about half of them housewives (22%). The percentage of business community (44%) is also significant. Majority of the participants had at least primary level of education (80%) and were aged over 30 years (58%). They represented diversified occupation and age groups.

Table 7: Socio-Economic Background of the Participants

Category	Sub-category	Frequency	Percentage
Gender	Male	72	72
	Female	28	28
	Total	100	100
Occupation	Student	20	20
	Business	44	30
	Farming	24	24
	Housewife	12	22
	Others	04	04
	Total	100	100
Education	Illiterate	20	20
	Primary	20	20
	Secondary	24	24
	SSC	20	20
	HSC & above	16	16

	Total	100	100
Age	21-30	42	42
	31-40	40	40
	41-50	18	18
	Total	100	100

Synopsis Of Major Observations, Findings And Analysis

The field observations reveal that UDC has brought a degree of positive impact on the rural communities in terms of enhancing their ability to perform a wide range of tasks more efficiently, offering better life style of rural community, generating exposure to knowledge and building awareness and valuing self-dependence with scope of mobility. In line with other studies (see example: Hoque et al, 2015), this research has also found that rural women could overcome barriers of mobility by availing the opportunity of ICT driven UDC services.

The analysis also indicates that the entrepreneurs were broadly satisfied and expressed zeal and interest in continuously improving their services. UDC was essentially built on PPP model, and the evidence suggests that this mode of operation has reasonably worked well— although there is ample scope for improvement. This study also identified the major weaknesses and challenges including the limitations of appropriate logistics, power supply, and infrastructure. Again, the current level of income generation of the entrepreneurs has not been at the optimum level. Although this programme has surely addressed gender and ‘Digital Divide’ to an extent, the manifestation of inequities still exists in the study areas. The female citizens however have enthusiastically embraced the opportunities given by UDC, still have limited access to information and communication technologies; and thus, number of women beneficiaries was very insignificant.

Heeks (2003) argued that in many developing countries, governments have tried to change too many things at a time to run e-Government system and failed for not having enough human and technical resources. The field observations of this study corroborate this reality. The UDC programme appeared at times to be somewhat ambitious, and its potential could not be fully utilized due to such limitations of inadequate logistics and infrastructure, limited supply of appropriately trained human resources, and difficulty in adopting and supporting modern technology. Overall, however, despite the limitations, it can be said that UDC has opened a window of opportunity for the people living in rural areas to enhance their ability to perform a wide range of tasks more efficiently – resulting in a degree of positive impact on the overall socio-economic development of the locality.

Table 8: Synopsis of Findings and Analysis

<i>Measuring impact on Citizens' behavioral pattern</i>	<i>Mean Value</i>	<i>Impact</i>
a. Increase ICT knowledge and Social communication skill	3.74	Moderate
b. Satisfaction regarding access to desired e-government services	4.10	Significant
c. Satisfaction regarding amount of fees paid	4.72	Significant
d. Increase the level of awareness and confidence	3.46	Moderate
e. Increase the mobility of women	4.06	Significant
<i>Measuring Infrastructure and Logistics Support</i>		
a. Power supply and Internet connectivity	3.54	Moderate
b. Sufficient number of furniture and ICT equipment	3.70	Moderate
<i>Efficiency in Service Delivery</i>		
a. Performance of UDC entrepreneurs in service delivery	4.00	Significant
b. Provide training facilities to the beneficiaries	2.98	Poor
<i>Reduction of time cost and distance</i>		
a. Less time, cost and distance barrier	4.96	Significant
<i>Reduction of Corruption</i>		
a. Removal of intermediaries and illegal exchange of money for getting e-services.	4.82	Significant

Key Challenges

Based on the findings of the study, the authors found some key challenges to provide service at door-step more effectively. Despite some obstacles, this innovative model of delivering services by decentralizing the desk of the government has gained more trust and reliability of the rural citizen. Firstly, the key challenge is to make this initiative financially sustainable, otherwise it will cease to function. But, the study found, in some areas, the financial performance of UDC is at stake. On the other hand, over commercial aspect in some areas might hamper the benevolent mission of the government. So, the fine balance between two is required.

Secondly, the quality of the entrepreneurs matters at the end of the day. The study found that, the entrepreneurs are not up to the mark at their skill level. Despite availability of the training session, the skill has not improved a lot. The recruitment of the entrepreneurs from the Dhaka central office is not monitored. The lack of this monitoring generating unskilled recruitment in UDC that is a serious threat to the sustainability of UDCs. Moreover, many of the female entrepreneurs either merely allow their male counterparts to lead or dropout after getting married or giving birth. It is an issue that is deep-seated in a multitude of social barriers.

Thirdly, the local government representatives are still not so interested to promote the service delivery mechanism of the central government services to the people and thus they cease to campaign in favor of the UDCs. Till date people are not still fully aware of the establishment of LDCs and its purpose or functionalities.

Finally, Infrastructure and Logistics Support for the UDCs are still inadequate. The challenge is to find out to what extent logistics and infrastructural supports are required for each UDC as the logistics and infrastructural requirements vary according to location and service delivery demand pattern.

Clues On Improvement

First and foremost, to maintain the quality of the entrepreneurs there has to a central recruitment system monitored by Access to Information (a2i) Programme. Standard criteria is required to be developed and a franchisee system—to serve as a meta business model for the entire chain of UDCs—could be designed. If the level of income is improved to a remarkable extent, skilled entrepreneurs—both male and female—would be interested to run this centres. In fact, time has come to ameliorate the training module and provide them with the advanced level training on entrepreneurship and development. Business development modules are required to include immediately.

Secondly, Bridging the gap between the UDCs and Upazilla based government offices is required to provide quality service to the people at the door steps. Proper coordination is required to make UDC more effective and service oriented. Monitoring the activities of UDCs should be rigorous to find out the suitable place for the establishment of UDC as the income considerably depends on location. UDC located in frequently visited public places rather than in remote places can generate more income for entrepreneurs.

Thirdly, the study has found that the general level of awareness about the associated services of UDCs is still limited and therefore, it is imperative to raise awareness by doing massive campaign. The campaign of promoting the effectiveness of service delivery of the UDCs has to be done by local government representatives. The key stakeholders including Union Parishad chairman and members, civil society organizations, government officials, political leaders and media should paly pivotal role to organize promotional campaign.

Finally, Infrastructural facilities like hi-speed internet connection and constant supply of electricity are clearly insufficient till date. Alternative sources of power like solar panel can be introduced to reduce the crisis. In fact, reliable and adequate infrastructural facilities are required to consolidate the e-Government services in rural areas. The BTCL may consider a special project to connect the UDCs under its 'super-fast' internet coverage. The government can also take initiative to supply 4G modem to the entrepreneurs to expedite their services.

Conclusion

ICT based government services has changed the life of the rural people, especially woman, considerably; however, it still has some inadequacies. The study has made it apparent that the beneficiaries have begun to apprehend the significance of the UDCs for its massive contribution on the empowerment of the people by providing them with the access to information and livelihood support. Moreover, ICT is working as aninstrument to bridge the gap between poor and rich people as well as increasing the capacity of the government service delivery mechanism, and moreover the capacity of the state in general. However, there is hardly any room for

complacency as UDC based service mechanism is still modest in operations and facing formidable challenges like suffering from financial sustainability and lack of logistics supply. Furthermore, UDC is an innovative model that brings private and government sector together in reaching the unreached. In order to sustain this worthwhile initiative of the government, therefore, direct attention and proper monitoring would be required from the relevant public agencies, academics and development practitioners. The researchers believe that this study will pave the way of future research in this sector as it has ample research scope.

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