

ICT BASED E-GOVERNMENT SERVICES FOR RURAL DEVELOPMENT: A STUDY OF UNION INFORMATION AND SERVICE CENTER (UISC) IN BANGLADESH

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ABSTRACT

Access to Information and Communication Technologies (ICT) has become increasingly important for economic, social and political aspects of any countries. However, the “digital divide” between urban and rural areas has introduced a significant gap in equally accessing information, mass communication and ICT, especially in developing countries like Bangladesh. This inequitable access has strong implication on productivity and economic growth of a country. Government of Bangladesh has introduced various ICT interventions to its rural and regional areas aiming at bridging the information access gap. Union Information and Service Centre (UISC) is one of those initiatives to bring opportunity for rural underprivileged communities to better access to ICT and information. However, no studies have been conducted to investigate UISC’s potentiality to offering access to ICT and information. The aim of this study was to investigate potential effect of UISC in the development of various socio-economic sectors in the vicinity of countryside of Bangladesh from actual beneficiary perspective. This study found that UISCs have opened a new window of opportunity for rural citizens in Bangladesh. It has the potential to empower rural communities to access information in various fields including agriculture, education, healthcare, and law. This study also found that most participants held positive view about the effectiveness and usability of various services available through the UISCs.

Key Words: *ICT, Union Information & Service Center, Rural Development, Bangladesh*

1. INTRODUCTION

Development of any country depends upon the country's capability of accessing and usage of relevant information effectively. It is argued that access to information is also important to allowing citizen to know their rights and overcome social exclusion (Harande, 2009). By facilitating the flow of information and knowledge between rural and more developed communities, Information and Communication Technologies (ICT) enhanced e-governance service can notably shore up rural development process in a developing country (Heeks and Bhatnagar, 1999). Over the three decades scholars have been arguing over the impact of ICT and mass communication initiatives on development in developing countries (Heeks, 2010). The majority of rural people in developing countries are found to live in a state of "under communication". Government in developing countries has been insisting that the use of ICT is an important part of struggling for development of people in rural areas (Shore and McAnany, 1980). Government in developing countries invested on ICT and mass communication to the process of modernization, information availability in rural areas, alternative ways of informing, educating, and persuading large audiences in underdeveloped areas quickly, cheaply and frequently (Francis et al, 1988).

Recently, information and communication technology for rural development has become an emergent research topic in most developing countries (Hoq, 2014; Pade et al, 2010; Alemna and Sam, 2006). Heeks (2009, p2) points out the need of information and technology in the rural areas: “Why invest in digital technologies rather than, say, a tubewell

to allow access to water? The standard response is we need to invest in both, arguing that development requires water and information and/or that ICTs can improve the planning and management of tubewell projects”. Taking this into account, developing countries like Bangladesh have been taking initiatives to implement ICT projects in rural areas with the help of donor or local agencies. However, gap still exists between urban and rural people in the penetration of the information and information technology in developing countries (Yu, 2006).

According to Okiy (2003:1) “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”. It has been claimed that information and communication technologies can lead to the development in rural areas in any countries including developing ones (Cecchini and Scott, 2003). With this in mind, the Governments of developing countries have been hastening to implement ICT projects in rural areas through direct and/or indirect supervision of national and international institutions such as the World Bank and United Nations (Ashraf and Malik, 2011). Researchers also suggest that if ICT be adopted properly, it can play a pivotal role in rapid development of developing countries, particularly in rural areas (Chapman and Slaymaker, 2002). However, the challenge is to how ICT can be implemented in an effective way that assists developing countries to meet their expectations of rural development (Mamba and Isabirye, 2014).

Development can only be effective if rural citizens have access to the information required for their day-to-day activities (Harande, 2009). In recent years, ICT based e-governance project in rural areas has been playing an important role in accessing 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). Union Information and Service Centre (UISC) has been an important initiative of the Government of Bangladesh to provide accurate, reliable and quality of information to Macro (national), Meso (organizational) and Micro (individual) levels. However, question arises to what extent can the UISC contribute to the development of the rural citizen in Bangladesh? Are the implementations of UISC successful for offering any potential economic and social changes of rural people in Bangladesh? Unfortunately there are very few reports and publications that have tried to address the above questions. This research attempted to fill this gap by addressing the above questions in a particular social context in Bangladesh. The primary aim of this research was therefore to examine the impact of UISC towards the development of socio-economic condition of citizen in rural areas of Bangladesh.

The rest of the paper is organized as follows. The next section discusses the literature review. A brief background of UISC is presented in Section 3. Section 4 explains the theoretical framework adopted to establish relationship between information and communication technology intervention and its impacts on changes in development-related individual behavior. Section 5 details the research methodology. The research findings are presented in Section 6 followed by an analysis in Section 7. Finally, Section 8 concludes the paper.

2. LITERATURE REVIEW

In recent years, ICT based e-Governance services in rural areas have demonstrated the important role in the realm of rural development. It offers the services of central agencies, district administration, and central government departments to the citizens at their village door steps (Naik et al, 2012). Developing countries such as Bangladesh has introduced e-

Government services for rural people as pilot projects which offer easy access to citizen services and improved government-to-citizen transactions (Bhuiyan, 2011). Some of these initiatives have already drawn international attention and have won prestigious awards for their innovative ideas (Kumar, 2015). Bangladesh won the World Summit on Information Society Award-2014 for its Digital Bangladesh Project such as UISC and seen as reference models for future e-government project implementations.

The Governments of both developed and developing countries are moving forward in e-Government development since it was conceptualized in 1993 (Misra, 2007). E-government defined as “the use of ICT and its application by the government for the provision of information and public services to the people” (Teicher et al., 2002, p385). The World Bank (2008) defines e-Government as “the use by government agencies of information technologies (such as WANs, the internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government”. E-government can serve different services such as better delivery of government services to citizens, citizen empowerment through access to information, improved interactions with business and industry, or more efficient government management (Dada, 2006).

It is argued that e-government improve the delivery of government services to citizens, businesses, and other government agencies as 24/7 basis (Palvia and Sharma, 2007). It transforms and supports the structures and processes of a governance system (Godse and Garg, 2007). Misuraca (2006) have found that e-government facilitate speedy, efficient, and transparent process of distributing information to the community and other agencies. It enhances the base, minimize the processing costs, reduce the cycle times and increase transparency (Rao, 2004). James (2000) reported that government organizations would be more effective if citizens could use the e-government systems to fill out forms, pay parking tickets, auctions on the internet, and register their cars.

Heeks (2001) found that e-Governance bring benefits to developing countries by making governance more effective and efficient. He analyzed case studies from four countries such as the Chile, Philippines, Honduras, and South Korea. The study outlines e-administration (improving government process), e-citizens and e-services (connecting citizens), and building external interactions (e-society) as key contributions. E-governance can play a significant role for poverty reduction, corruption control and cost-effective service delivery to the citizens (Bertot et al., 2010). Monga (2008) analyzed e-governance at the local, state, and central levels of government. He found that e-governance has brought about a revolution in the quality of service delivery to the citizens by improving transparency, simplifying procedures, saving time reducing corruption, improving office and record management.

Alias et al (2011) found that easy to use, secure, cost and language constraint act as significant barriers to adoption of e-Government in rural areas. Organizational hindrance significantly influences the adoption of local e-government initiatives such as local telecenter (Nurdin et al, 2011). Drljaca and Latinovic (2012) revealed that e-Governance is one of the foundation stone for successful integration of knowledge based economy and improvement of life of citizens in rural areas. The application of e-Governance in Union Parishad (the lowest tier of the local government) can control and even eliminate corruption and build an accountable and transparent Union Parishad system. Union Parishad service delivery system can be improved dramatically by ICT based e-government services (Iqbal and Seo, 2008).

The above literature portray considerable successes of e-governance in developing countries, such as increasing transparency, quality delivery of public services, reducing corruption, income generation, citizen empowerment, eradicating poverty, and gradual development of government citizen relationship. The above literature also shows that research is few or non-existent on e-government such as UISC in rural areas and their role for

rural development in Bangladesh. This study will be a unique research in this field and handy for decision makers.

3. UISC AND RURAL DEVELOPMENT IN BANGLADESH

Bangladesh is a small country of 147570 square km and has about 156 million population, where 76% of its population live in rural areas (BBS, 2011). It has been struggling to meet the basic needs such as food, clothing, shelter, health, and education to its population and to raise the standard of living. Alike other basic needs, information is another vital requirement for the development of rural people. However, the people, living especially in grass-roots areas of Bangladesh, are far away from the reach of their basic informational needs (Bangladesh Demographic and Health Survey, 2007). To address this issue, Government of Bangladesh, International aid agencies, NGOs and private organization have been taken initiative to introduce and promote community telecentres offering access and use the information, especially for rural people.

In rural areas in Bangladesh, local ICT resource centres, usually called telecentres, have considerable potential for narrowing the “digital divide” in remote, rural and otherwise disadvantaged communities. The telecentres in Bangladesh such as D.NET, GrameenPhone’s Community Information Centres (GPCIC), GrameenBank’s Digital centres and YPSA’s Youth Community Multimedia Centre, all contribute to bringing the benefits of new technologies to people in rural areas. These centers can be especially useful in helping rural people in Bangladesh to take advantage of the information economy, access agriculture, education, healthcare, environment, government information, jobs and other services, and develop socially and economically (Akter and Georgsen, 2012). Moreover, some of the recognized NGOs in Bangladesh such as Dhaka Ahsania Mission and Bangladesh Rural Advancement Committee have already started organizing community libraries in the rural areas with equipment of ICT to support the lifelong learning processes related to community development (Islam, 2009). Bangladesh Telecentre Network (BTN) which is a coalition of organizations for fostering telecentre movement in Bangladesh has already been taken several initiatives in support of a telecentre strategy in Bangladesh.

Besides the privately owned 3000 (Approx.) telecenters or CICs, the government has established Union Information Service Centers (UISC) to gear the pro-poor ICT benefits at bringing fundamental changes in rural people. UISC is one of those having the potential to bring the benefits to rural people who do not otherwise have access to information and technology (Akther and Georgsen, 2003). The main services of UISCs are agro-based information service, government services information, internet services, ICT training, photocopy service, printing service, telemedicine, accessing government and private organizations information (Habib et al, 2013).

UISC is ICT enabled one-stop service outlet located at *Union Parishads* (the lowest tier of the local government) level. Similar to the ‘telecentre’ concept by different private organizations (Asad, 2011), the UISC model is unique in the sense that it builds on the concept of *Public Private Partnership* (PPP) instead of donation dependent models. There are 4,501 UISCs established at all *Union Parishads* through the country, all of them inaugurated on 11th November 2010, in order to translate the dream of ‘Digital Bangladesh’ into reality (Asad, 2011). Over 9002 young entrepreneurs including 50% women are working with UISCs (Win, 2011). Entrepreneurs are unpaid self-employed who maintain their living with their own income. The primary challenge of UISC is how to ensure the citizens carrying out the benefits of UISCs and making them sustainable. In order to make it successful and sustainable for the long run, public-private partnership is built. Such partnerships are built with government agencies (Cabinet Division, Bangladesh Computer Council), non-govt. organizations (Dhaka Ahsania Mission, Practical Action), Banks (Dutch Bangla Bank, Trust

Bank Limited, Mercantile Bank, One Bank Limited, BRAC), life insurance (Jibonbima), telecommunications (Robi, Banglalink), solar energy (Infrastructure Development Company Limited), and Cyber Cafe Owners' Association of Bangladesh (Mohiuddin and Hoque, 2013).

UISC plays a vital role in providing rural information services. The major aim of UISC is to provide basic rural information to the rural dwellers. It acts as information and community centers to improve living conditions and the quality of life. Government of Bangladesh divided UISCs services into three: government, information and commercial. Government services are provided at free of cost. On the other hand information and commercial services are provided at low cost to mitigate the digital divide between urban and rural. Government services include government circulars and notices, online birth registration, population census data entry, online university admission, examination results, citizenship certificate and citizen charter of Union Parishad. Information services include agriculture, education, health, law and human rights, environment and disaster management, tourism, science and technology, industry and commerce and employment. Commercial services include banking, life insurance, English learning, computer training, internet browsing, printing, compose, scanning, photocopy, data entry, phone call, mobile ringtone download, video conference, video show, passport and visa processing, medical services, soil test, arsenic test, etc. (A2I, 2013).

UISCs are expected to a center of service excellence providing hassle free (i.e easy access to information) and efficient services for the citizens' information need and assisting addressing the issue of digital divide. Wei et al. (2011) have identified three level of digital divide. The digital access divide or the first-level digital divide is the inequality of access to IT. The digital capability divide or the second-level digital divide is inequality of capability to exploit IT and the digital outcome divide or the third level digital divide is the inequality of outcomes (Wei et al., 2011). Government of Bangladesh expected that Union Information and Service Centre (UISC) is one of the efficient initiatives which are expected to bring the opportunity for rural underprivileged communities to better access to information.

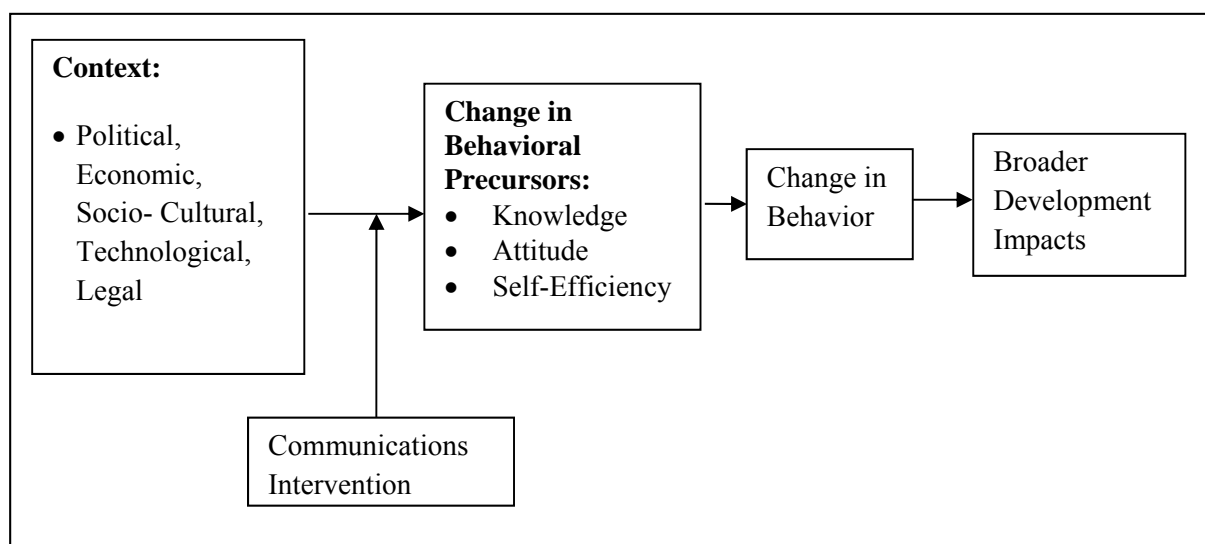
4. THEORETICAL FRAMEWORK

A number of theoretical framework such as Capabilities (Sen) Framework, Livelihoods Framework, Cultural-Institutional Framework and Communications-for-Development (C4D) framework have been developed to study Information and Communication Technologies for Development (ICT4D) project. Livelihoods framework has poor and limited linkage to information and ICTs. It contains a multiplicity of potential dependent, independent, and intervening variables (Makoza, 2011). The main difficulty of Cultural-Institutional Framework is that that institutional forces such as culture are both effect and cause and in relation to ICT4D (Heeks and Molla, 2009). Capabilities (Sen) Framework needs understanding of the potential freedoms and the informational requirements of the CA can be extremely high (Clark, 2005). On the other hands, Communications-for-Development (C4D) framework is simple model with clear connection between information and development (Heeks and Molla, 2009). Therefore this study applied "Communications-for-Development (C4D)" (Bertrand, 2006) framework to study ICT4D project such as UISC.

C4D framework is used to establish a direct relationship between information and communication technology intervention and its impact on any changes in development-related individual behavior. Communication technology intervention such as UISC encompasses access to and exchange of information, creation of knowledge and open access to knowledge, development communication, strategic communication, information and communications infrastructure and technologies (Hassan and Semkwiji, 2011). The UISC intervention changes the overall development of individual in a positive way. The C4D model

also identifies different context such as political, economic, socio-cultural, technological and legal which also influence the change in behavior which leads to development. Researchers found that political, economic, legal and socio-cultural context of a country influence the knowledge and attitude of individual which is moderated by different types of communication intervention (Jafari. 2013; Pearce, 2013; Porter, 2000). It is also found that up-to-date technology influences the self-efficiency of an individual (Dishaw et al., 2002). The framework is outlined in figure 1.

Figure 1: Communications for Development (Bertrand, 2006).



C4D is a generic model for testing the impact of any type of ICT intervention. For example, Ashraf et al (2010) used the C4D model for evaluating the impact of mobile phone based ‘health help line’ service to health-seeking behavior of rural people in Bangladesh. C4D is mostly applicable to communications oriented projects such as UISC. The rationale behind is that this project regularly develops content aiming at altering behavioral precursors of increasing knowledge; changing attitudes and improving perceived self-efficacy (Heeks, 2005). Finally, communication of information (e.g. via UISC projects) can change the behavior of receivers (i.e., rural people).

5. RESEARCH METHODOLOGY

5.1. Research Setting

This research followed an interpretive approach through a case study method. An interpretive research lends itself to investigation of complex human processes within their social context (Myers and Avison, 2002; Walsham and Sahay, 2006). This research paradigm, in conjunction with a qualitative methodology, allowed the researchers to address issues of UISC’s influence and impact on development, and understand the processes of rural development. This study also applied Most Significant Change (MSC) technique which was proposed by Harris and Tarawe (2009) to evaluate a complex, participatory, rural development program in Bangladesh. MSC technique is suitable for quantitative indicators as involves regular collection and participatory interpretation of “stories” about changes (Davies and Dart, 2005). Stories are pivotal point to human intelligence, and things such as relationships, a sequence of events, cause and effect can be defined by stories (Willettts, 2007). This study applied a purposive sampling procedure to select study sites and potential participants (Creswell & Clark, 2007).

5.2. Study Area

The study was conducted in three Union Parishad (lowest tier of regional administration and mostly rural) such as Murapara, Shimulia and Kalatia under Rugganj, Savar, and Keraniganj Upazilas (the second lowest tier of regional administration) in Bangladesh between January and March 2013. Data was collected from study participants before and after adopting UISC. This research seeks to understand the process of ICT (i.e., UISC) implementation and examine ensuing changes resulting from such implementation in a particular social context. Table-1 shows contextual information of the above three Union Parishad under three Upazilas including land area, population, density, occupation, average income, literacy rate and geographical condition.

Table 1: Contextual Data of three Upazilas (Study Sites).

| Study Sites (Upazila) | Area (sqkm) | Population | Density | Major Occupation | Average Income | Literacy Rate | Geographical Condition |
|------------------------------------|-----------------------|------------|---|-------------------|----------------|---------------|------------------------|
| Murapara Union Parishad, Rugganj | 8.68 km ² | 58200 | 1,516/km ² (3,930/sq mi) | Agriculture | 8000 Taka | 51.36% | Traditional |
| Shimulia Union Parishad, Savar | 15.55 km ² | 220369 | 4,951/km ² (12,820/sq mi) | Agriculture | 7000 Taka | 64.36% | Elevated plain |
| Kalatia Union Parishad, Keraniganj | 19.31 km ² | 40007 | 3,177/km ² (8,230/sq mi) | Industrial worker | 10000 Taka | 75% | Traditional |

Source: National e-Tathyakosh (www.infokosh.bangladesh.gov.bd)

5.3. Data Collection

Data was collected through on-site observation, face-to-face semi-structured, open-ended interviews, and informal conversations with users of UISC. Sample sizes are usually small in qualitative research (Malhotra & Das, 2011). A meta-analysis of five hundred and sixty qualitative studies shows that the mean sample size is 31 with a mode of 50 (Mason, 2010). Therefore, a sample size of 50 was chosen for this study. The participants were identified and recruited through the operators of the centers. Interview and group discussion data was primarily collected from the users directly or indirectly connected with the UISCs. The interviewees were asked semi-structured open-ended questions about the use, challenges and opportunities with a view to generate stories of their experience regarding the UISC. Examples of questions that were asked include ‘*how do you get benefits from the use of UISC?*’, ‘*Has UISC contributed significantly to raise your income and productivity?*’, ‘*How does UISC help in augmenting your skills?*’. During the interviews with open-ended questions, the participants were encouraged to express their lived experience related to the UISC interventions from a user perspective. In addition, participants were encouraged to report *why* they consider a particular change to be the most significant one.

5.4. Data Analysis

The interviews were audio voice recorded in the local language and translated into English by the research team. Since the research was exploratory rather than confirmatory in nature, we used ‘content analysis’ for analyzing the interview transcripts (Berg, 2001). The analysis involved converting the transcripts of one of the interviews into story form, a thematic analysis of each other 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 patterns/themes and their relationships identified

through content analysis, 10 representative stories of 10 key contexts were developed from 50 transcripts. All content analysis was done manually.

6. FINDINGS

6.1. Demographic Profile

31 males and 19 females participated in the interviews. A snapshot of socio-economic backgrounds of the participants is presented in Table 2. About 32% participants were farmers with half of them housewife (18%). Majority of the participants had at least primary level of education (84%) and age over 30 years (74%).

Table 2: Socio-Economic Background of the Participants.

| Category | Sub-category | Frequency | Valid Percentage |
|------------|------------------------|-----------|------------------|
| Gender | Male | 31 | 62 |
| | Female | 19 | 38 |
| | Total | 50 | 100 |
| Occupation | Student | 8 | 16 |
| | Business | 13 | 26 |
| | Farming | 16 | 32 |
| | Housewife | 9 | 18 |
| | Others | 4 | 8 |
| | Total | 50 | 100 |
| Education | Illiterate | 8 | 16 |
| | Primary | 14 | 28 |
| | Secondary | 10 | 20 |
| | Higher secondary (HSC) | 8 | 16 |
| | Above HSC | 10 | 20 |
| | Total | 50 | 100 |
| Age | 21-30 | 13 | 26 |
| | 31-40 | 21 | 42 |
| | 41-50 | 16 | 32 |
| | Total | 50 | 100 |

6.2. Impact of UISC

This section represents our findings regarding the impact of UISC implementation from actual beneficiary perspective. The results of this study suggest that the UISC project in Bangladesh has reduced the distance and time barrier of rural farmers. In the past they were required to visit to an agricultural specialist usually located in main city far away from their local community or country town. Now they have access the required information easily through a local UISC centre. An example is as follows:

I am a farmer. I didn't have any idea about scientific method of cultivation. I used to work all day long with my two bulls on my own land. But the output was very low. I then came to know about UISC of my union. I went there; I came to know that they provide with printed agricultural information for a

very small fee. I bought one of them and with the help of my school going daughter, I was able to improve my knowledge about the scientific methods of cultivation. Now I earn more than before, and I am very grateful to UISC.

Besides this, UISC project also helps rural students to acquire new knowledge and skills. Through UISC project students can easily get their information about IELTS, SAT and scholarship. An example is as follows:

I am a 12th grade student and a part time private tutor. I am very ambitious about my life. I want to go to America with a scholarship for my higher studies. I wanted to know how to get that. I got to know about UISC and I went there to browse the internet. I have got to know about IELTS and SAT. I have downloaded SAT vocabulary list and printed that from UISC. Now, I am preparing myself to be eligible for a scholarship in USA.

The results also indicate that the UISC project has also helped rural students interact with urban students and facilitate information sharing between them. An example is as follows:

We usually go to UISC to browse internet. I have made a Facebook account and made friendship with students of urban areas. Once a week, I access this account and socialize with different people. Now, I talk to them and exchange information with them. However, my study time has shrunk a little.

The UISC project has also helped rural people to go abroad by providing right information and processing application. An example is as follows:

I want to go to abroad to earn money. I tried to go in many ways. I wasted much of my money in search of a broker who will help me to go abroad. But brokers were all thugs. I got cheated. Then I came to know that UISC provides information about abroad at a reasonable price. From there I came to know about government's recruiting process for Malaysia. I applied for it through UISC. And now I am very hopeful about it.

Meanwhile the results also point out that rural people can increase their skills via training provided by UISC and thus enhance their employability. An example is as follows:

I was an unemployed person. I was taking computer training in UISC. I have learned type writing. After completion of the training, I got a job as a typewriter in Dhaka.

In addition, the results also suggest that UISC can help rural people solve health related problems. An example is as follows:

I am the owner of a grocery shop. My mother suffers from high blood pressure. I used to take my mother to the nearest clinic which is far away from our house to check up her blood pressure. Now, I go to the UISC to check up the pressure and goes to the clinic for consultancy only when blood pressure seems to be alarming.

Closing the knowledge gap of rural people is another benefit identified in the study. An example is as follows:

I am a house wife. I once faced some problems with division of my husband's land after my husband's death. Brothers of my husband did not want to give my proper claim. One of my neighbors advised me to go to UISC office to have law advice. There, I came to know about the laws of property division, and claimed my portion. Now I have got my portion, and I am living a very happy life.

Another benefit unveiled in the study is UISC provides rural people with online learning opportunities. An example is as follows:

I have recently passed H.S.C. with GPA 5 from humanities group. I want to get admitted into Dhaka University. I have no relatives in Dhaka. Moreover, I am crippled. I became tensed about the admission process. However, one of my elder brothers advised me to fill the form of Dhaka University from online. So I went to UISC and accordingly submitted my form and take part in the admission test. Eventually I got a chance to do my honors in Economics from Dhaka University.

Although, there is currently a wide range of UISC available to access to basic information, there is still a division of who is allowed access to it. An example is as follows:

"I am housewife living in rural areas of Bangladesh. I went to UISC to get the birth certificate of my children. They did not give it to me. They requested me to send my husband to collect it. I am deprived not only economically, but also in terms of information"

UISC is time consuming and expensive than previous systems. An example is as follows:

"I am a small businessman living in rural areas of Bangladesh. Our village has one UISC operated by only one person and he is normally absent. One day I went to UISC to collect some important documents. I did not find anybody there. After two days, I went to UISC again to collect the documents. The young guy told me that he is unable to provide services today because of no internet connection. I need seven days to collect the documents. Previously I can collect those types of documents within a day"

7. ANALYZING THE STORIES USING C4D FRAMEWORK

The stories defined to analyze the UISC intervention have been analyzed by applying the "Communications-for-Development (C4D)" model discussed in Section 3. The outcomes derived are shown in Figure 2.

Figure 2: Implication of Communication for Development Model.

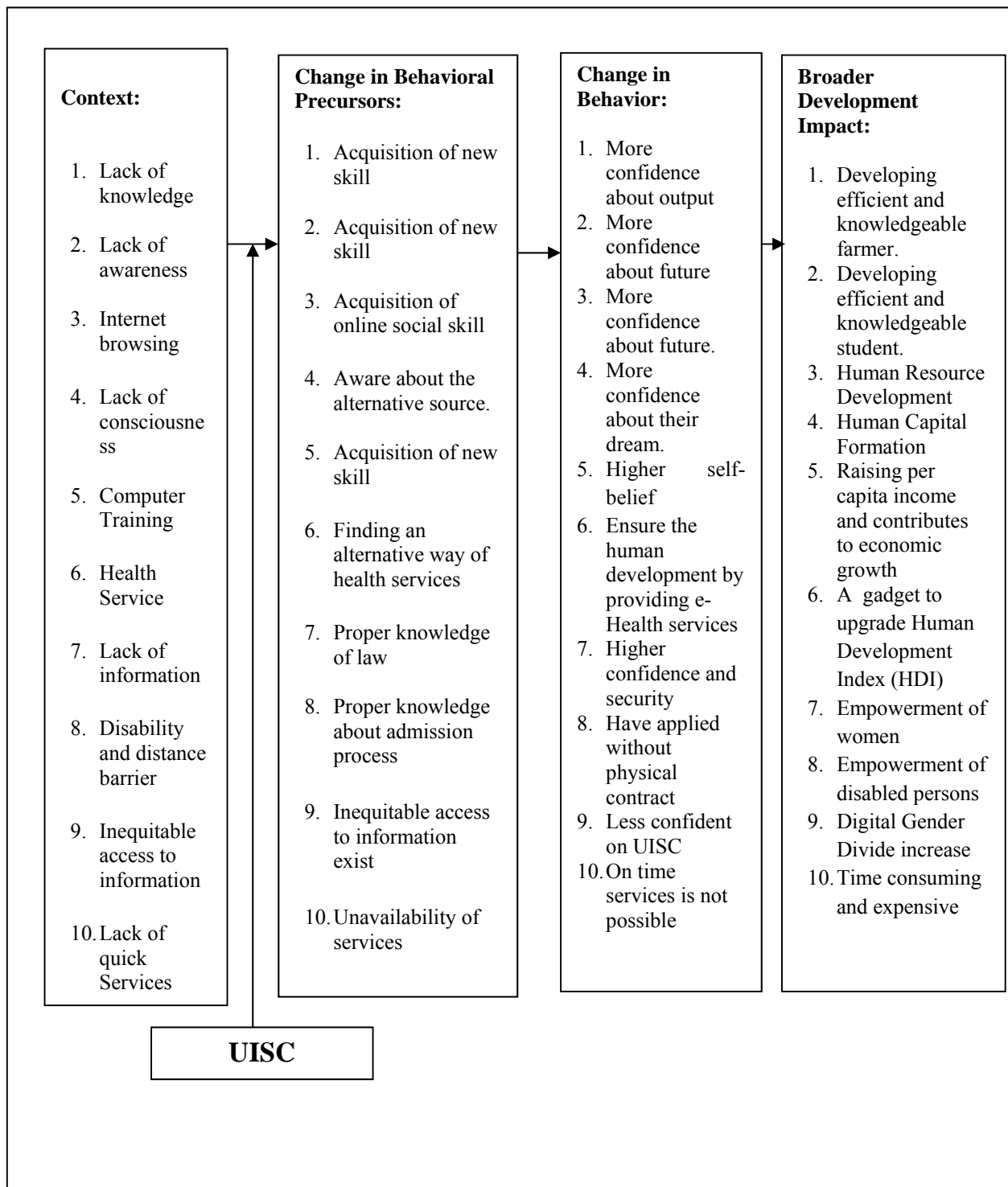


Table 3: Stories Compared with Indicators from C4D Model.

| Story | Context | Changes in Behavioral Precursors | Changes In Behavior | Broader development Impact |
|---|-----------------------------------|--|--|--|
| Story-1, 37, 12, 17, 18, 24, 26, 30, 34, 36, 39, 40, 44, 46 | Lack of knowledge | UISC helped rural people to acquire new knowledge. Before adopting UISC, rural people have to visit to city for information. Now they have access the required information easily through a local UISC centre. | After adopting UISC, rural people are more confidence about output / information. | Developing efficient and knowledgeable farmer. |
| Story-2, 16, 23, 28, 29, 31, 38, 42, 45, 50 | Lack of awareness | Adopting UISC helped rural people to acquire new skill. Through UISC project rural people can easily get information such as IELTS, training program. | After adopting UISC, rural people are more confident about the future. | Developing efficient and knowledgeable student. |
| Story-3,14, 20, 43 | Internet browsing | UISC helped rural people to acquire of online social skill. It facilitates information sharing between them. | We are more expert on ICT and Internet and able to exchange information with others. | Human Resource Development |
| Story-4, 19, 22, 27 | Lack of consciousness | The rural citizens are now aware about the alternative source by adopting UISC. | Rural citizens are more confidence about their dream. | Human Capital Formation |
| Story-5, 33, 47, 49 | Computer training | UISC increase the employability by acquisition of new skill | Our self-belief are higher than previous | Raising per capita income and contributes to economic growth |
| Story-6, 35, 48 | Health service | Adoption of UISC helped rural citizen to find an alternative way of health services and treatment | UISC ensure the human development by providing alternative health services such as e-Health services | A gadget to upgrade Human Development Index (HDI) |
| Story-7, 11, 15, 21, 25, 32, 41 | Lack of information | The diffusion of UISC reduces the knowledge gap among the citizen. Rural people are now more knowledgeable about law and security. | Rural women have more confidence on law and security. | Empowerment of women |
| Story-8, 13 | Disability and distance Barrier | Rural people are now familiar with online environment such as e-learning by adopting UISC. | People including disabled people in rural areas are also included in digital development. | Empowerment of disabled persons |
| Story-9 | Inequitable access to information | Inequitable access to information exists, although many UISC are available in rural areas of Bangladesh. | Rural women have less confident on UISC because of gender discrimination. | Digital Gender Divide |
| Story -10 | Lack of quick Services | Adoption and diffusion of UISC in rural areas are high, but unavailability of services is not uncommon. | Rural citizen think on time services is not possible in UISC. | Time consuming and expensive |

As per the information in Table 3, it is quite rational to identify some dimensions of benefits and challenges acquired by harnessing UISC. Table 4 summarizes the benefits and detriments derived from the information provided by the participants. Among the 10 dimensions, the most prevalent one is the ‘developing efficient and knowledgeable farmer’. Efficient and knowledge farmer are those who have the skills, knowledge, and ability to improve standards and outcomes for farming (Asadullah and Rahman, 2009). 14 participants (28.0%) indicated that they feel more efficient and knowledgeable after gaining access to the UISC services. Farmers in rural areas are now involved in direct trading within the country and abroad by UISC (Mohiuddin and Hoque, 2013). Rural farmers also get the wholesale and retail prices of around 200 commodities from 30 districts (out of 64) on the web through UISC.

Two participants (4.0%) indicated that ICT helped to empower the disabled persons belonging to infinitesimal category in terms of dimensions of benefits of UISC. Information and communication technology solutions would empower disable people to access information in the digital world. It can help disabled people to take full advantage of education and employment opportunities which leads to sustainable long term empowerment opportunities (Hossain, 2010). Nearly 20.0% of participants indicated that UISC services enhance their efficiency and knowledge. Efficient and knowledge student are those who have the skills, knowledge, and ability to improve their efficiency and reducing the knowledge gap (Khan et al., 2012). UISC offers various education related services, such as submission of application for admission and publishing examination results. Students are offered their Secondary School Certificate (SSC), Higher Secondary School Certificate (HSC) and similar examinations result through the UISC services.

Table 4: A Snapshot on the Dimensions of Benefits and Detriments of UISC.

| Dimension of Benefits/Impacts | Exact Number of Beneficiaries | Valid Percentage |
|---|--------------------------------------|-------------------------|
| Developing efficient and knowledgeable farmers | 14 | 28.0 |
| Developing efficient and knowledgeable students | 10 | 20.0 |
| Human Resource development | 4 | 8.0 |
| Human Capital formation | 4 | 8.0 |
| Raising income | 4 | 8.0 |
| Human Development Index | 3 | 6.0 |
| Empowerment of Women | 7 | 14.0 |
| Empowerment of disabled persons | 2 | 4.0 |
| Gender Digital Divide | 1 | 2.0 |
| Time consuming | 1 | 2.0 |
| Total Numbers of Dimensions Found = 10 | Total 50 | 100.0 |

UISC opens the door for women to involve in different ICT based activities. These bring opportunities for them to change behavioral aspect of lifestyle which eventually affects the society as a whole. UISC offers not only employment opportunity for them but also potentiality for entrepreneurs with others (Ahmed et al., 2006). About 14% of participants claimed that UISC can increase their knowledge (i.e. law, rights, etc.) and competency which empowers them in society. ICT is a tool for political and social empowerment of women, and the promotion of gender equality. Women are able to earn their livings by means of ICT which substantially contributes to the family elevating their positions in own households, and the society they belong to (Ahmed et al, 2006).

The participants for dimensions, namely human resource development; human capital formation; raising income; were 8%. Bada and Madon (2006) found that ICT can build effective human capital in any nation and are being deployed to develop human resources contributing to social, economic, and political progress in developing countries. The e-village project such as UISC can enable rural people to access information reinforcing opportunities for improving their income generation (Chapman and Slaymaker, 2002).

The participant for dimension, human development index was 6%. The Human Development Index (HDI) is published by the United Nations Development Programme (UNDP) which summarizes measure of human development. It is the alternative practice of evaluating a country's progress in development. There are three HDI measures such as health, education and income (Cooke et al., 2007). In this study we use the health indicator as human development index.

This study also found some negative influence of UISC such as gender digital divide and time consuming. Gender digital divide still exist in UISC because of socio-political situation of Bangladesh. This finding is consistent with Hilbert. Hilbert (2011) found that women's access to information and use of ICT in developing countries is questionable so far. Although female citizen enthusiastically embrace digital communication, they have still limited access to information and communication technologies (ICT) in male dominated developing countries. Nearly 2.0% of participants indicated that UISC is time consuming and expensive. In developing countries, most of the governments are trying to change too many things at once by e-governmnet, although they have not enough human and technical resources (Heeks, 2003). Consequently, sometimes services are unavailable because of lack of resources such as human resources and technology.

This study evidences that UISC brings a great opportunity for the people living in rural areas to enhance their ability to perform a wide range of tasks more efficiently resulting a positive impact on the overall economy of the country. This service assists them to be self-dependent. The research shows that most people, including disadvantaged, in rural area of Bangladesh are satisfied with the performance of the services provided by UISC (Habib et al., 2013). This study also reveals that handicapped people can conquer disability by integrating ICT driven UISC services in rural areas which is analogous to the findings of Benda et al (2011).

The findings of this study are consistent with those of Ashraf et al (2010) where the former study found that rural people are excited to avail the services of UISC and are significantly benefitted by it. Our study also demonstrates that ICT based UISC service contributes notably for the betterment of health of rural people. Moreover, the use of ICT offers various possibilities specifically significant for overcoming functional difficulties in workplaces (Tilley et al, 2006). Finally, UISCs have opened a new window of opportunity for the rural citizens in Bangladesh. It can make the rural communities in Bangladesh empowered and prosperous by delivering relevant information in regards to agriculture, education, health, law, etc. on time near doorsteps of all people (Ahmed, 2006).

8. CONCLUSIONS AND FUTURE RESEARCH

This paper has examined the contribution of *Union Information and Service Centre* (UISC) to socio-economic development in rural areas of Bangladesh from the beneficiary's perspective. It has presented research findings from a case study conducted in three Union Parishads under three Upazilas in Bangladesh. It is evidenced from the study that UISC has offered significant opportunity for rural people to access various types of information through the Information and Communication Technology (ICT) introduced. It is evidenced that UISC services have played a significant role in the development of socio-economic condition including health of rural people. Findings of the study contribute to the development of strategies and policies to enhance ICT based e-government services in Bangladesh.

A major limitation of this study is the small sample selected from three Union Parishads in Bangladesh. Therefore, the results may not be a true reflection for the entire population of Bangladesh. Due to the cross-sectional study design, the actual effects of users' level of experience before and after the system adoption cannot be confirmed. A potential future research, therefore, could expand the study with a larger sample size and with longitudinal data to uncover a more generalized view of UISC's effectiveness to the development of rural communities.

This research was conducted within the specific domain of ICT (i.e., UISC) in a particular context (Bangladesh). We believe, however, that the study has the potential to make significant contributions to our knowledge in the areas of ICT based e-government

services, and hence opens an opportunity for collaborative research in the field among developing countries.

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