

# Key Factors to be Considered for Making Union Digital Centers (UDCs) Sustainable in Bangladesh

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## Abstract

In this era of information and communication technology (ICT), efficient and cost effective public services delivery had become highly expected by the citizen in every country. In developed countries, digitally enabled public services were established in recent years while the developing countries like Bangladesh were trying to establish this advancement. The UNDP, USAID and the Government of Bangladesh launched the Access to Information (A2I) programme to improve the services delivery to reach at the doorsteps of citizen. Under this umbrella, Union Digital Centers (UDCs) were launched in 2009 at every Union of Bangladesh to reduce the “Digital Divide” in public service delivery. Thus, it had become the concern nowadays to make this initiative sustainable for a long run, this study focused to find out some key factor to be considered for making them sustainable in Bangladesh. It explored the previous researches related to these centers and same categories of institutions in other countries where the researchers argued about some issues in different aspects. Based on their findings and discussions, this study tried to analyze the key issues influencing the sustainability factors. To analyze the factors for sustainability, it addressed the financial, investment, business development and publicity, competencies of entrepreneurs, community acceptance and gender issues, institutionalization and physical infrastructure concerned with UDCs. The Government agencies, policy makers, researchers could be consider those recommendations for developing the strategies for sustaining the operations of UDCs in Bangladesh.

**Keywords** Union Digital Centers (UDCs), Sustainability, Access to Information (A2I), Bangladesh

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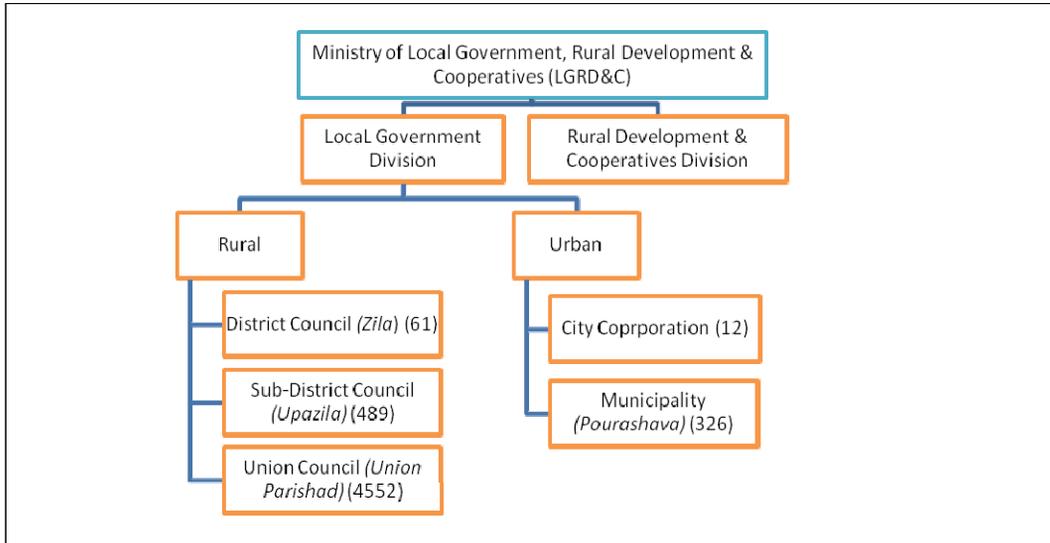
## 1. Introduction

In recent years, the term “Digital Divide” had inextricably been linked to achieve social equity (UN, 2014). According to International Telecommunication Union (ITU), the UN specialized agency (2016), more than half of the world’s population would not yet be using the Internet by end of 2016. While almost one billion households in the world had Internet access (of which 230 million were in China, 60 million in India and 20 million in the world’s 48 Least Developed Countries), figures for household access revealed the extent of the “Digital Divide”, with 84% of households connected in Europe, compared with 46.4% in the Asia & Pacific region and 15.4% in the African region (ITU, 2016).

Focusing on this issue, the governments and the donor agencies in developing countries stressed to popularize the telecentre movements for digital inclusions, e-service promotion and e-literacy in the context of technological, financial and human resource constraints in order to establish wider connectivity (Bhatnagar, 2004; Hanna 2010). Accordingly, a number of telecentre models had been implementing in different countries around the globe aiming to reverse the trend of out-migration from rural areas, to ensure e-services at the doorsteps of people, and to increase IT awareness, capabilities, and self-employment (Falch, 2004; A2I, 2015). However, nowadays the sustainability of these telecentres had become a critical concern where government services were embedded mostly (Naik et al, 2012; Harris et al, 2003).

Since 2006, Access to Information (A2I) Programme under the Prime Minister’s Office was launched in Bangladesh by UNDP to ensure the new initiatives and programmes on e-governance, ICT for development (ICT4D), technical assistance for developing national e-governance vision and strategies in Bangladesh (A2I, 2015a). During 2009, present government of Bangladesh introduced the concept “Digital Bangladesh” as one of their electoral pledges also called as “Vision 2021”—which promised to be converted into middle-income country by its golden jubilee (50 years) of independence.

Figure 1 Local Government Layers of Bangladesh



(Source: Annual Report 2014-15, Local Government Division, Bangladesh)

Union Digital Centres (UDCs) in Bangladesh, formerly known as Union Information Service Centers (UISCs), were the hallmark achievements of Vision 2021 and Digital Bangladesh (Bakshi et al, 2016) that aimed to work as one-stop centre for e-service delivery provided by various agencies of government, private and local government services to the doorsteps of people. UDCs established in 2010, were government owned, micro-enterprises working as one-stop information and service delivery outlets, across all Union Parishads (UP), the lowest tier of local government [Figure-1].

Each centre had been running by two young local entrepreneurs – a male and a female under the supervision of a local advisory board headed by the elected UP Chairman (BBS and A2I, 2014). These micro-enterprises were operating under the public-private partnership (PPP) modality where the private sector was considered a key partner in each of the initiatives undertaken by UDCs. These centres had been equipped with computer, laptop, internet modem, mobile phone, webcam, photocopier, scanner, printers, multimedia projector, digital camera and solar panel, etc. initially supplied by the government and the UP. Services were being offered by both government organizations (land records, birth registration, telemedicine, life insurance, and overseas job application) as well as private sector companies (mobile banking, English learning, telephone services, etc.) (BBS and A2I, 2014). The primary goal of the establishment of UDCs was to ensure services at walking distance for reducing time & costs without any hassle in exchange of prescribed fees. Additionally, entrepreneurs would be supposed to meet the operational costs and income with this variety of services and could expand their own business in a UDC to provide better services to

its citizen. For effective delivery of these services, government had engaged other partners such as banks, life insurance companies, mobile phone providers and 1103 non-governmental organizations (A2I, 2012). While the government had assisted in the initial set up of UDCs, it was expected that entrepreneurs would eventually take the responsibility of sustaining the business in the long run (A2I, 2014; UN 2012).

However, Access to Information (A2I) Programme urged to find out the possible ways to make the operations of UDCs sustainable in Bangladesh. A2I emphasized on some criteria – a) income of entrepreneurs, b) investment by entrepreneurs, c) publicity for available services, d) skill development for entrepreneurs, e) effective management committee, f) support from local administrators, g) complaining system for UDC sustainability (A2I, 2015a). In addition, some other challenges were also be considered like people's misconception about entrepreneurs as if they were paid employees of government, internet connectivity, relationship with UP chairman, political influence, drop-out rates specially for women entrepreneurs, social taboo for women working environment etc (A2I, 2014a; A2I, 2015). In this study, the authors would aim to identify some influencing factors, theoretical frameworks, experiences of different countries and conceptual explanations for understanding the long-term sustainability of UDCs in Bangladesh.

## 2. Literature Review

The term sustainability mostly be used as the phrase in sustainable development tracked back in 1987 by the report of World Commission on Environment and Development (WCDE, 1987), well known as “Brundtland Report”. The commission defined sustainable development as “...that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development focuses on improving the quality of life for all of the Earth's citizens without increasing the use of natural resources beyond the capacity of the environment to supply them indefinitely...” (Brundtland, 1987).

The researchers nowadays focused the sustainability based on financial sustainability (Harris et al, 2003; Faroqi, 2015), and some often evaluated sustainability by analyzing and comparing the business models (Naik, 2011; Hosman & Fife, 2008; Proenza, 2001; Wellenius, 2003). Heeks and Bhatnagar (1999) proposed the critical success factor (CSF) and the critical failure factor (CFF) models. The ten critical factors that Heeks and Bhatnagar identified were: information, technical, people, management, process, culture, structure, strategy, politics, and environment. Later Roman and Colle (2002) suggested another ten themes: commitment by policy-makers, importance of partnerships, value of innovators, value of community volunteers, clusters or networks, awareness, research, business plans, information services, participation. Upon these concepts, Kumar and Best

(2006) proposed a Sustainability Failure Model and argued that the sustainability failure of an ICT4D project usually took five principal forms: financial/economic sustainability failure, cultural/social sustainability failure, technological sustainability failure, political/institutional sustainability failure, and environmental sustainability failure. Similarly, Stoll argued to integrate social, political, cultural and technical sustainability as vital elements into planning and operation for financial sustainability (2003). Other theoretical models included “design-actuality” gaps, the match or mismatch between information system designs and local user actuality, based on the contingency theory (Gerhan & Mutula, 2007; Heeks, 2002) and the stakeholder theory, which presumed the necessity of a well-balanced partnership between players, particularly between informatization actors and the beneficiary (Bailur,2006).

Recent studies emphasized on the long run sustainability focusing on financial and the sustainability ecosystems for UDCs. These studies focused some initiatives, activities, coordination among the local government body and the entrepreneurs, local administration supports, drop-outs of entrepreneurs etc (A2I, 2015a). Some researchers drew some potential of these centres in various aspects public service delivery for rural people. Shadat and Rahman (2016) suggested that to channelize the overseas migration process so that the migration cost would be reduced in negligible amount for the beneficiaries. It was also found that the service recipients were more satisfied to get the services from these centres with the minimum amount of money and more importantly reducing the time and frequency of visit (Hoque et al, 2015; Bakshi, 2016). Moreover, in Bangladesh a few studies had previously focused to pay attention for financial of sustainability concerns of these UDCs. Hence, the goal of this study would clarify some influencing factors to be considered for further policy design in long-term sustainability of UDCs in Bangladesh. To clarify a practical and theoretical point of view, it would also focus on different theoretical frameworks and experiences practicing in different countries to conceptualize the comparative understanding.

### **3. Research Methodology**

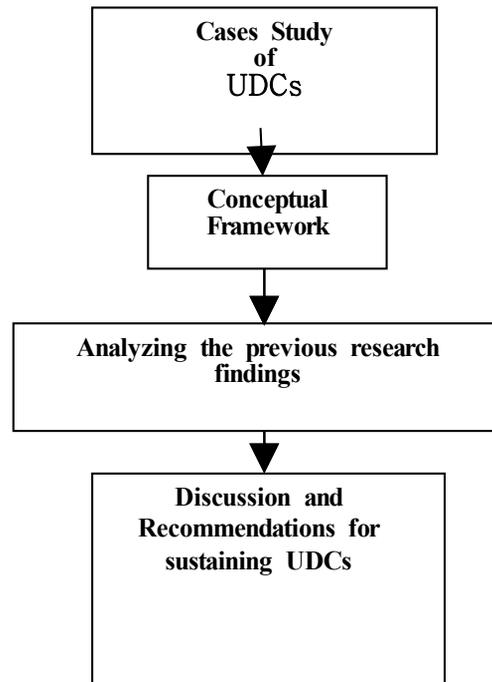
This study would be based on “case study” information collected from secondary resources, including scholarly articles, statistics, government reports, concern program annual reports, newspaper reports, and official speeches where the sustainability issues were highlighted for telecentres in different countries. George and Bennett (2005) stated that a case study approach could be used methodologically to incrementally refine the generalizations, either by broadening or narrowing the scope or initiating new types through the inclusion of additional variables. According to case study methods, it could explain both quantitative and qualitative data as well as the outcome of a specific phenomenon through comprehensive observation, reconstruction and

analysis of the cases (Zainal, 2007; Tellis, 1997). Yin (1993) suggested three types of case studies in social sciences research: exploratory, explanatory, and descriptive. According to Yin (2003) a case study methodology could be adopted in the aspect of four category research questions: (a) the focus of the study would answer “how” and “why” questions; (b) researchers are unable to manipulate the behaviour of those involved in the study; (c) researchers try to cover contextual conditions because of the beliefs that are relevant to the phenomenon under study; or (d) the boundaries are unclear between the phenomenon and context. As the primary objective of this study would focus on the sustainability of the UDCs in Bangladesh, it might appear that a single explanatory case study could be justified (George & Bennett, 2005; Yin, 1993).

After establishment of UDCs in Bangladesh, various studies were conducted in different aspects highlighting the prospects and potentials of UDCs in Bangladesh. Researchers tried to suggest the potentials of UDCs in the arena of connecting rural areas, easy access to health service information, financial inclusion, and reduction of time & cost for citizens to receive different services etc. A few researches focused on financial sustainability of the entrepreneurs of these UDCs. Since, there were no sustainable theories or models for UDCs in aspects of social, environmental and technological point of views. In addition, the role of local government bodies, implementing agencies, government departments, and citizen were more likely important factors for making the UDCs sustainable.

As the telecentre movement had become more popular in the developing countries for ensuring effective government services to the rural areas, the scholars proposed a number of structured models and theories for making them sustainable in financial, social, environmental and technological aspect. Accordingly, some scholars also identified some major financial, social, environmental and technological constraints of sustainability of UDCs in Bangladesh.

Figure 2 Research Design



This study would sort out different types of constraint factors affecting the sustainability of UDCs and relate to the proposed or applied models in different countries with the same category of programmes. It will also relate the factors of success and failure status of this type of programmes in different countries and make the conclusion of 'best fit' for the sustainability of these UDCs. Accordingly, it would try to recommend the effective coordination methodology among the stakeholders of these centres.

The data analysis and the graphical presentation of this study would follow the descriptive statistics which would be correlated with the research objectives.

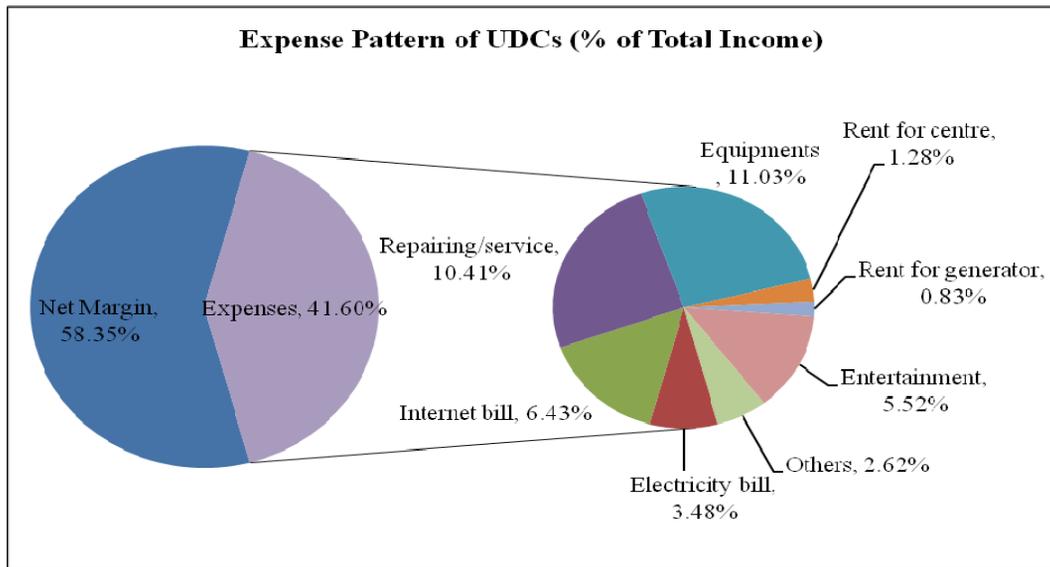
#### 4. Analysis and Results

Under the formation of PPPP (Peoples-Private-Public Partnership) modality, entrepreneurs (both male and female) and Union Parishads (UPs) were the most key point to sustain the existence of UDC activities. Local Government Division and A2I played the supportive role to provide technological, operational, monitoring and advisory services for making sustainable of these UDCs. In this paper, some key factors have been discussed that could be considered for making these UDCs sustainable to achieve the goal of "Vision 2021".

#### 4.1 Income and Expense Pattern of UDCs

According to UISC Census 2013 of BBS (2014), the entrepreneurs generated revenue about BDT 41.65 million (approximately US\$ 530,068) on a monthly basis across the country. It was also estimated that UDCs operated on the ground floor generated the lion’s share of 64 percent, followed by first floor 21 percent, and outside UDCs making up 14 percent of total income.

Figure 3 Expense Pattern of UDCs (% of Total Income)



Source: BBS and A2I. (2014). UISC Census 2013 – Census Report on Union Information and Service Centres (UISCs). Bangladesh Bureau of Statistics (BBS) and Access to Information (A2I) Programme

On the other hand, it was estimated that UDCs spent as expenditure about BDT 17.34 million per month. Accordingly, these UDCs could make a profit of BDT 24.31 million per month and about BDT 5,361.33 (approximately US\$ 68.24) for each UDC. In the expense pattern, UDCs spent about 22 percent of total income for repairing equipment or buying new equipment. Additionally, Internet bill and advertisement costs were two other major expenditure heads [Figure 3].

Since there were two entrepreneurs in each UDC, the income of each entrepreneur calculated a monthly income of BDT 2,680.66 (approximately US\$ 34.12) that amount was below the national poverty line – defined at US\$1.90 or below per person per day (World Bank, 2015). Besides, according to National Pay Scale 2015 declared by the Government of Bangladesh, the lowest amount of government employees of the country set of BDT 8,250.00 (US\$ 105). Considering this amount as low paid job in the country, the amount could be considered here as minimum sustainable income for the UDC Entrepreneurs.

#### **4.2 Investment Pattern of UDCs**

According to the contract between UPs and the entrepreneurs, entrepreneurs were committed to maintain day to day operating cost and generate the profit as much they can form these UDCs. They were also supposed to invest for adding new infrastructures, equipments and repairing the existing ones to expand and sustain the business. Since the establishment of these UDCs on Public-Private Partnership (PPP), the Government with the support of UPs made the initial investment on related equipments, infrastructure development, skill development and other related activities. It was expected that the Entrepreneurs and UPs would take over this project and operate in the long run. But the rate of further investment by the entrepreneurs was found out at minimum cases (A2I, 2015a). The main reason behind less investment was the uncertainty of their business as well as their existence in UDCs. As the UP chairpersons were elected for every five years tenure and they were provisioned to re-appoint their concerned UDC entrepreneurs, the entrepreneurs were worried about their future existence as if the newly elected chairpersons might not re-appoint them (Hoque et al, 2015).

#### **4.3 Publicity**

The entrepreneurs were providing a number of information based public and private services to the citizen. These services were included the public services (land records, birth registration, telemedicine, life insurance, and overseas job application, etc) as well as private sector services (mobile banking, English learning, telephone services, etc.) in exchange of pre- levied fees. According to the UISC Census 2013 of BBS (2014), the mostly used methods for publicity of the services were yard meeting in village area, banner, signboard, public announcement, gathering-meeting, public communication, poster/leaflet, video presentation and etc. Among them, public announcement and communication was found as most popular mode of publicity of these services.

#### **4.4 Entrepreneurs' capabilities**

As the services provided by the UDCs were mostly based on internet and computer supported services, the entrepreneurs were supposed to be highly competent with these applications. In a study, Faroqi (2015) found that a large number (43.4 percent) of the entrepreneurs (both male and female) had basic computer training of less than six months. Even some of them had become familiar with computer applications after involving in UDCs. It was also found in his research that only a few had advance level academic knowledge like Diploma (7.8 percent) and Bachelor (4 percent). Additionally, they used to receive some training programs organized by local

administration to improve their competency.

#### **4.5 Community acceptance and gender**

A study conducted by A2I (2015) found that in some cases the community people had the perception about the entrepreneurs as government paid employees to provide services to the citizen. They could not accept the issue of taking money by the entrepreneurs for providing services. This study also revealed that the community people perceived that entrepreneurs charged extra money for service to make their own profit and this entrepreneurship would be their easiest way to become rich.

In another study of A2I (2014a), it was discussed about the community acceptance about women entrepreneurs. It was mandated that in every UDC, there would be two entrepreneurs – one male and one female. However, due to authoritarian tendency of male entrepreneur and social taboo related working with a male partner, the participation of women entrepreneurs was getting lower. Some cases, the practice of conservative mindset of community people obstructed a girl to work outside day long with a male counterpart or in such a place where male frequently visit to complete their works. As per the findings of UISC Census 2013 of BBS (2014), there were 933 UDCs where no women entrepreneur was found and a total of 1355 UDCs were found where women entrepreneur worked for 1 to 2 days; 3 to 4 days in 710 UDCs; 5 days in 494 UDCs; and 7 days in 217 UDCs. The major reason behind the drop-out of women entrepreneurs was that they got married and shifted to their husband's place which would usually be the different place.

#### **4.6 Institutionalization pattern**

The UDCs were providing the services only connecting their computer and modem based internet in most of the cases especially in rural areas. When one came to take any service the entrepreneurs tried to provide this service through accessing the concern websites, and applications such as results of public examination, agricultural product information, application for passport etc. They used a limited number of centralized public applications to provide these services such as birth certificate, death certificate, various government forms etc. As there was no integrated intranet connectivity among these UDCs and centralized data center combining all the public services, the entrepreneurs were using a common blog "<http://uiscbd.ning.com/>" for sharing their new ideas, problems, discussion among themselves national wide.

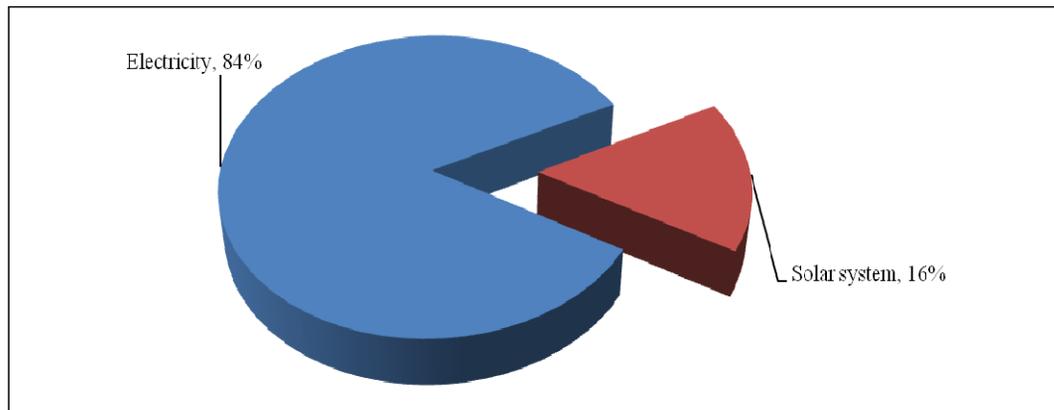
In India, Government implemented the project of Common Service Centers (CSC) where more than 100,000 broadband Internet enabled tele-centers were established in 600,000 villages. These tele-centers were also operated based of PPP modality to ensure e-Delivery of G2G, G2C and G2B

services. In aspect of IT infrastructure, all the centers were connected to a secured Government network including State Data Centre (SDC), State HQs, District HQs, and Blocks HQs having minimum two (02) MBPS broadband connectivity (Chauhan, 2009). These centers made all Government services accessible to the citizen in their locality at affordable costs to ensure effective, transparent, and reliable e-Government services.

#### 4.7 Physical infrastructure

According to the primary establishment, Government supported the infrastructural development along with physical equipments for each UDC. It included computer, laptop, internet modem, mobile phone, webcam, photocopier, scanner, printers, multimedia projector, digital camera and solar panel, etc. On top of that a few entrepreneurs invested for some equipment such as laptop, internet modem, mobile phone, solar supported power system etc. According to UISC Census 2013 of BBS (2014), about 84 percent of UDCs had electricity supply whilst a total of 736 UDCs or 16 percent had the access to a solar system for power back-up support [Figure 4].

Figure 4 Proportion of UISCs with electricity and solar system



Source: BBS and A2I. (2014). UISC Census 2013 – Census Report on Union Information and Service Centres (UISCs). Bangladesh Bureau of Statistics (BBS) and Access to Information (A2I) Programme

Shahnewaz and others (2015) revealed in a study that UDCs were facing different types of problems in providing services to the citizen where “Load Shedding” due to interrupted supply of electricity was the highest Problem Confrontation Index (PCI) scored problem identified by the entrepreneurs. ‘Slow speed of internet’ was identified as second highest PCI scored problem followed by “Lack of adequate equipment’s”; “Poor publicity of services”; “Poor physical facilities”; “Poor location of UDCs”; “Lack of security” etc.

## 5. Discussion and future study

Nowadays, it's become a major concern to make the UDCs sustainable for ensuring effective and reliable e-Government service delivery to citizen nation-wide. The Government of Bangladesh tried to explore the strategies and action plans to make them sustainable in long run with sustainable existence of the entrepreneurs as well. In this paper, some key issues were discussed so that it could assist the government officials, policy makers, researchers and other stakeholders for further action plans for UDC sustainability.

### 5.1 Financial sustainability

Naik (2011) suggested that the UDCs would increase the range of services including the core services those would be essential for the citizen of rural areas. He also suggested to include more government services through these centres as well. More services would ensure more earning to ensure the stability of income of entrepreneurs of UDCs. In Bangladesh, more or less every government department was directly accomplishing a number of public services for citizen. These services could be identified and centralized through National Data Center (NDC) and made them connected through the UDCs. Though, the lack of e-readiness of these government departments would be considered a major bottleneck.

Proenza (2001) also suggested that to achieve long term sustainability of telecenters like UDCs should establish effective partnership with a variety of public, quasi-public agencies, corporate houses and other civil society institutions, appeared to be the most promising way forward. In Madhya Pradesh of India, India Tobacco Company-International Business Division (ITC-IBD) established village Internet kiosks called "eChoupals" run by local entrepreneurs who used to provide futures' price information to farmers and to enable them sell their products directly to ITC, bypassing the middlemen and wholesale market yards (Kumar, 2005). In rural areas of Bangladesh, farmers used to face difficulties for getting fair price for agricultural products. Through establishment of a strong marketing channel like "eChoupals" through UDCs could reduce the influences of intermediaries so that the farmers could get better price for their products.

These initiatives would make the UDCs more accessible to the community people for multi-various services. Accordingly, UDCs could generate more income to become financially sustainable in long run.

### 5.2 Sustaining investment

Since the entrepreneurs were committed to make their own investment for expanding the business, it resulted that their investment rate was too low as expected. They were more worried

about their future existence indeed. So, it would be necessary to establish the policies to sustain their existence in this business. Though, the UP chairpersons were considered as their immediate local monitoring authority, it should be evaluated fairly the performance of the entrepreneurs and the process of re-appointing them after the agreement period. Even the newly elected UP chairpersons could not fire them without the concern of local administration and other stakeholders. It might increase the confidence to invest more to expand the business.

On the other hand, it could be the better option to encourage some local investors to invest their money with the collaboration of local administration and the entrepreneurs of UDCs. The entrepreneurs would be responsible for generating more profit to ensure the efficient return for the investors. This investor-business relationship would enrich the urge of making more profit as well as the sustainable business environment.

### **5.3 Sustaining Business Development and Publicity**

Beyond the current publicity pattern, the stakeholders would make some business development plan for each and every individual service provided by the UDCs. For this issue, Government could make some bilateral agreement with specialized marketing agencies to develop effective business development plan for every service. Along with, the concerned public and private organization whose services would be provided through the UDCs, should take some effective action plans to promote their services to the citizen.

Additionally, some promotional activities would be arranged in local academic institutions such as primary schools, secondary schools, colleges and universities to orient the students about the services of UDCs. The institutions could also be collaborated with UDCs for providing some ICT-based services for the regular activities such as ID card printing, distributing government allowances to the students through the mobile banking services and any other related activities.

### **5.4 Sustaining Entrepreneurs' Capabilities**

It would be required that the entrepreneurs should be competent enough to deal with ICT-based applications to provide efficient services. It would also be more important to have the adequate knowledge of operating business as well. Some specific programs could be initiated to develop their technological competencies as well as to prepare or plan an effective business plan for their prospective business. These programs should include the issues such as computer & internet operations, financial management, consumer management, marketing strategies, and innovations. These issues would develop their competency to design their effective business models.

Figure 5 Factors to be considered for sustainability of UDCs



### 5.5 Sustaining Community Acceptance and gender issues

It would be required to increase the awareness to the community people about the role of entrepreneurs regarding UDCs operations. They should be notified about the payment systems of UDCs in exchange of getting services. Even, the list of given services with concerned fees could be displayed in front of every UDCs so that the service receiver could realize that the entrepreneurs would not charge for extra money.

In case of women entrepreneurs, as their drop-out rate is very high due to authoritarian tendency of male entrepreneur, social taboo and marriage; some re-engineering methods could be adopted as well. In every UDC, the service point could be separated for both male and female entrepreneurs having connected with the same intranet. Besides, the married women whose husband's house would be near to the UDCs; brother-sister from same family; or a married couple could be encouraged to become the entrepreneurs to minimize the rate of dropping-out of female entrepreneurs. Nevertheless, the effective awareness programs should be implemented against the social taboo by the Government, NGOs, private organizations and other related institutions.

### 5.6 Sustaining institutionalization

For making effective institutionalization, all the UDCs should be networked under a single infrastructure where each and every UDC could be connected to the National Data Center, all government departments through intranet. Being connected to the single network, the entrepreneurs could access every single service to be provided to the citizen to minimize their time, cost and number of visit. Accordingly, the concerned agency could monitor every single activity of the entrepreneurs that would ensure more effective accountability, transparency, and efficiency as well.

### **5.7 Physical infrastructure**

The researchers showed that the “Load Shedding” due to interrupted supply of electricity hampered the service delivery and a small number of UDCs (16 percent) were using solar supported power system at UDCs. So, the alternative energy systems could be the better solution to resolve these issues such as to establish solar power system in every UDC to maximize the energy consumption from natural sources. In Bangladesh, every sub-district councils were connected to the high-speed broadband internet connectivity through optical fiber (ICT Division, 2016). So, it would be possible to establish the high-speed broadband internet connectivity through optical fiber with all the UDCs in a single network. It would also resolve the problem of “slow speed of internet” issue facing by the entrepreneurs.

As mentioned earlier, there were 4,552 UDCs operating their business activities operated by two (02) entrepreneurs in each— one male and one female, there should be an effective incubation system to provide sustainable business environment. The researchers, academicians, policy makers could explore the feasibility, potentials of incubation system for these entrepreneurs in future study.

## **6. Conclusion**

Union Digital Centers (UDCs) became an important institution for getting the e-services in doorstep in Bangladesh. Citizen could receive the desired services by reducing their time, cost and number of visit to go to the city or sub-urban area. It had also that potential to change the pattern of livelihood through information-based services in the area of education, health, agriculture and other social-economic indicators. So, the existence and sustainability of these UDCs for a long run became the burning issue now in Bangladesh. The Government of Bangladesh would like to make a sustainable strategy for making these centers sustainable for a long run. This study was also trying to explore some key factors to be considered for making the strategies for this sustainability issue.

This study tried to explore the findings of other researches related to UDC and same categories of institutions in other countries. It focused on the sustainability factors where these researchers

resulted in their studies. To ensure the sustainability of these UDCs operations, financial sustainability could be the most essential part as strongest predictor. In addition, other related factor should be addressed simultaneously such as social, technological, people, management, process, strategies, infrastructure etc.

It was addressed in this study that the range of services should be increased to ensure the more income generation as well as to develop effective business development plan to promote those services to the citizen. For expanding the business operations, the entrepreneurs should invest their money or some local investors could be introduced for building a good investor-business relationship which would urge to more profit and to make the business sustainable. As a result, the entire government departments could be integrated with the UDCs through a secured networked with their services to build them a one-stop service center for every single public service. It would also be important to collaborate with the private agencies to reduce the influence of intermediaries over the agricultural products and to ensure more profitability to the farmers.

For building an effective intranet infrastructure among the UDCs, government departments, and other related stakeholders, physical infrastructure such as effective power supply systems, high-speed broadband internet connectivity should be developed. Moreover, the entrepreneurs must be more trained and competent enough in the field of ICT-based knowledge as well as preparing business planning and strategies. Nevertheless, some effective initiatives and programs could be implemented for sustaining the involvement women entrepreneurs for this business.

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