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FINANCIAL SUSTAINABILITY OF UNION DIGITAL CENTER IN BANGLADESH

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ABSTRACT

This paper examines the financial sustainability of the Union Digital Centers (UDC) in Bangladesh in terms of entrepreneur's monthly income. In order to mobilise additional resources and harness efficiency gains for providing rural people with digital information and services and generating entrepreneurship the government have engaged home grown youths under public-private partnership (PPP) in the project. Contrary to the expectation, many entrepreneurs earn vary minimum and are forced to depart the venture leaving behind the promise of the telecenter disrupted. In the context of precipitating dropouts from limited income understanding and predicting a sustained level of income attain significance. This study aims to identify factors that have influence on the variability of entrepreneur's income. For collecting data from involved partners it surveyed 538 entrepreneurs online and interviewed other management stakeholders. Since all entrepreneurs could not be reached through the internet 19 of them are interviewed in-depth along with relevant management officials and local representative of the UP from 16 UDCs of 4 districts. It defines the sustained income as 5001 (USD 65) and above Bangladeshi Taka per month and predicted it using the binary logistic regression. It ascertains the major enablers of sustained income and the interrelationship among them that evolve from the interplay of partners. The study finds that most UDCs are somewhat reasonably supported with the basic ICT equipment, while others are adorned with advanced equipment, to provide a range of services including certificates, e-government and commercial type. However, the level of equipment and services across centers varies depending on the extent of assistance from the government, the UP and the entrepreneurship of the private partner. The scale of inputs from public partners and the entrepreneur's investment have been found to be associated with the number of people including disadvantaged visiting these centers for services. All these variables are associated with the income of the entrepreneur with different magnitudes. The hypothesis that partnership components such as infrastructure and service inputs, entrepreneurial capacity along with people's participation all have a significant part in explaining the monthly sustained income is tested using the binary model and found to be partially supported. The author argues that some of the inputs still could not make any significant contribution due to the lack of effective involvement of relevant partners. But to ensure financial sustainability of all UDCs and to prevent the dropouts of entrepreneur's the increase in units of these factors can play a significant role.

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INTRODUCTION

The telecenter movement is increasingly attaining popularity in developing countries for its missions of digital inclusions, e-service promotion and e-literacy spread in the context of technological, financial and human resource constraints for establishing widespread connectivity (Bhatnagar, 2009; Hanna 2010). Often, for cheaper and

convenient capacities this innovation is adopted by many governments as the leapfrogging strategy to bypass massive infrastructural and management cost burdens for development of full scale e-government. Being a window of e- delivery point it enables the government to reach those who are otherwise unreachable with the promised benefits of e-government. Since the aim is to curtail cost and reach out with greater efficiency many telecenters are founded on Public Private Partnership (PPP) approach. It is understood that though the government take the initial responsibility to build them they would ultimately be owned and operated by the private sector with the financial viability attained. But to date the achievement is half-way between success and failure (Naik, 2011; Jensen, 2007). On a parallel trajectory Bangladesh has also followed a similar solution to connect its citizenry, vast majority of who live in rural and distant communities, to digital information and services (A2I, 2011). The government's technical and advisory unit in charge of e-services, the Access to Information (A2I) under the Prime Minister's Office, has adopted a quick-win strategy by introducing shared access points in all Union Parishads (UP), the lowest tier of local government existent all across the country (4547). In operation since 2010 these access points are known as the Union Digital Centers (UDC) that aims to work as the focal point of service delivery by bringing various government, private and local government services to the doorsteps of people and to foster local entrepreneurship. Operated by two private entrepreneurs (Uddakta), one male and a female, under the public-private partnership model, the UDC is an ICT enabled one-stop center supported by the government and the UP. It charges prescribed fees for delivery of services to meet the day to day operation costs and income for entrepreneurs. While the government has assisted in the initial set up of UDCs it expects that entrepreneurs would eventually take the responsibility of sustaining the business in the long run (A2I, 2015)

However, the initial observation and conversation with relevant stakeholders suggest that this project suffers from a very high rate of drop-outs of entrepreneurs from a variety of reasons, predominantly from low levels of income. The lack of adequate income serves as a major disincentive for eEntrepreneurs, especially women entrepreneurs, who leave the UDC premise trailing behind the promise of the center interrupted with financial and opportunity costs as well as a dent in the entrepreneurship development (A2I 2015; Siddiquee and Faroqi 2013). No study has so far covered as what factors are responsible for the insufficiency in income. Hence, understanding the financial sustainability in terms of operator's income attains significance in for its implications for entrepreneurship and sustainability of the model.

RELATED WORKS

In the context of externally supported telecenter project financial sustainability attains utmost importance in the discourse of sustainability since donor subsidies cannot be taken for granted for ever (Harris, 2007). The term refers to the capacity for earning adequate income for covering costs for operation and initial set up (Shadrach and Sharma 2013). However, as the revenue sufficiency does not preclude receivables from the outside, for government owned projects the financial sustainability may not always refer to attain the 'break-even' point by charging users because many other government services are not burdened with such a responsibility (Hudson, 2001; Harris, 2007). But under PPP it must ensure generation of adequate income for its entrepreneurs (who are not salaried) to support operating costs and themselves, since it is a social enterprise (Sharma, 2011). Income sustainability is a prerequisite for continuity of the service of the entrepreneurs and expansion of the business. If the telecenter cannot run on its own

operation the investment behind it becomes a drain of public resources incurring the opportunity costs of development finance. Moreover, without establishing market principles it would not have incentives to better permanence and continue its existence in the face of competition (Wellenius, 2003). The surplus revenue generation is also required to replace the inexorable breakdown of equipment along with maintenance costs to avoid shut down (Proenza, 2001). The continued earning capacity largely depends on trained staff or their competent replacements with their capabilities maintained and utilised. When skilled people find a better market place they would usually be lured away from the project but the prospect of sustained income can help with quicker replacements (Baark and Heeks, 1999). In the context of Indian Common Service Centers (CSC), which is also founded on PPP, an assured income for the operator equivalent to USD 150 is considered as the desirable level to sustain and adhere him/her to the business (Sharma, 2011).

Under PPP the relevant stakeholders' effective involvement is considered as the enabler of financial sustainability. The leadership in government creates avenues for such engagement for building up friendly policy, infrastructure roadmap, needful services and resource channelling which have connotations for other sustainability dimensions such as 'Organizational', 'Policy' and 'Social' along with the 'Financial' one (Shadrach & Sharma, 2011). The factors for much needed financial viability estimated are equipment infrastructure and its usage, relevant contents and people's participation as happened in the case of *Akshaya* telecenter in India in attaining economic, social and entrepreneurial sustainability (Prasad, 2012; Toyama et al 2005). These dynamics emerge from the role play of partners in the model which function as the roof of the structure and supports entrepreneurship. Local applications and contents attract social acceptance and local ownership by the community (Shadrach and Sharma, 2011). People's visit in an increased number can ensure community acceptance and potential earning base as well (Kumar, 2007). Wellenius (2003) stresses that without initial public support from the rural poor commercial viability is at risk. To mobilise people and achieve financial sustainability private partner's entrepreneurial capacity is much like the backbone. A good entrepreneur understands the business mechanisms in the market and designs his enterprise accordingly with investment risks. Researchers underscore that telecenter's management and governance structure should be streamlined to promote it as an enterprise. Careful recruitment, training of entrepreneurs and subsidisation on business plan and market skills are conducive to entrepreneurship development (Shadrach and Sharma 2011; Cecchini & Scott, 2011). Ensuring less costly and speedy connectivity, reward for good performance, and incentives from the generated revenue all have a part in entrepreneurship development (Kumar, 2007).

While these studies have discussed the theoretical underpinnings of financial sustainability there are clearly lack of empirical studies to provide any model to explain as what factors contribute to the sustained level of income of entrepreneurs. There is an urgent need to develop a model and test on financial viability as most externally funded telecenters face challenges with the exit of largesse finance (Kumar, 2005). This study focuses on the financial viability of the UDC from identifying the factors evolved from the interplay of partners in the model that have influence on the variability of entrepreneur's income. Despite there are other forms of sustainability this research paper only deals with the income sustainability. Correctly ascertaining the factors behind it will have implications for preventing drop-outs, and thus ensuring sustainability of the UDC. Since major factors of income sustainability evolve from involvement of partners under PPP with different inputs and people's participation (as the literature suggests) the hypothesis of the study is:

Partnership involvement in terms of infrastructure inputs, entrepreneurship and people's participation contributes to the Entrepreneur's income sustainability.

This paper is organised into 6 sections: Section 1 introduces the research problem, literature review and hypothesis. Section 2 identifies the methodology which is followed by discussions on independent and dependent variables in the section 3 and 4. Section 5 presents the income sustainability model followed by conclusion in the last section.

METHODOLOGY

The research is about the financial sustainability of the UDC and, hence, the respondents for questionnaire survey and the interview¹ are key stakeholders who are responsible for various aspects of operations and management such as Entrepreneurs, Management officials and UP representatives. 538 entrepreneurs are surveyed online. The internet survey is used to get responses from large number of respondents with least cost and time (Couper and Bosnjak, 2010). The response rate is 27% which is consistent with typical response rates of conventional online surveys (Nulty, 2008; Shih & Fan, 2008). Information on key variables used in the model are collected from the entrepreneurs since they are the ultimate managers and users of equipment, existing services, record keepers of service recipients, beneficiaries of government and local government supports and income from the UDC along with their own investment in the project (Bhatnagar, 2009). Since all entrepreneurs cannot be reached online 19 entrepreneurs are interviewed in-depth along with relevant management officials and UP representatives in the field level 16 UDCs from 4 districts² for richer understanding of how quantitative values are created (Mingers, 2001). Since there is a lack of erstwhile research all effect sizes are reported according to Cohen's (1988 cited in Gray and Kinnear, 2012) interpretation. The Income sustainability model of entrepreneurs is developed using the binary logistic regression since the dependent variable 'Monthly Income' is a negatively skewed one and there is a need to make a cut point for sustained level of income. The validity and reliability of certain composite concepts used as predictors in the regression model are determined through Exploratory Factor Analysis (EFA) and Cronbach's Alpha respectively (Gray and Kinnear, 2012; Pallant, 2011).

DISCUSSION ON INDEPENDENT VARIABLES

In our model the following variables are considered as independent variables.

The UDC's Infrastructure Inputs

The UDC is located in a room hosted by the Union Parishad in most cases. The space in the office or the availability of furniture there maintains a close affinity with the overall infrastructure conditions of the UP. The equipment is initially provided by the government assisted by donors and the UP from its Local Government Support Project (LGSP) funded by the central government. Subsequently, entrepreneurs also have added some equipment along with carrying out expenses for day to day operating costs. The equipment can be categorised into two types based on their availability and the nature of job they perform: ICT equipment and Non ICT equipment. The ICT equipment such as computers, laptops and internet modem which are required to

provide e-services are overwhelmingly available in all UDCs (around 85%) and their working conditions are also good in majority cases (around 75%). The Non-ICT equipment can also be of two types: (1) 'picture equipment'³ such as digital camera, colour printer and scanner are also commonly existing in all UDCs not exceeding their absences for more than 18% for the most and; (2) 'advanced equipment' such as photocopier, generator, multimedia projector, solar panel, etc. These advanced equipment are dearer and hence are not available in all UDCs with their marked absences except for the multimedia projector which is absent only around 20% UDCs. Whereas all equipment has a role in providing services and thus earning an income for the entrepreneur the picture equipment specifically is associated with higher values {rho (N, 527) =.233} compared to other types of equipment and it is thus used as a predictor in our model later.

Regarding the internet infrastructure, the above table shows that the most available equipment in the UDC is the internet modem (90%) which is actually used for connecting the mobile internet. The frequency distribution of the type of internet connection (not shown here) also demonstrates that only 10% UDCs have broadband connection. The field observation suggests that mobile internet connectivity is very slow and prone to frequent breakdown. However, research shows that broadband have an impact the income level worldwide (UN 2012). Dose this happen in our case of entrepreneur's income? Cross tabbed with the monthly average income the resulting frequency distribution of internet connection type is presented in the table 2.

TABLE 1. CROSS TABULATION OF INTERNET CONNECTION TYPE WITH MONTHLY AVERAGE INCOME

		Internet Connection Type					
		Dial-up or Mobile internet		Broadband		Total	
		Count	Column N %	Count	Column N %	Count	Column N %
Average monthly income in last 3 months	0-5000 Taka	175	41.6%	12	25.5%	187	40.0%
	5001-10000 Taka	128	30.4%	18	38.3%	146	31.2%
	10001-15000 Taka	53	12.6%	6	12.8%	59	12.6%
	15001-20000	35	8.3%	4	8.5%	39	8.3%
	20001-25000	16	3.8%	1	2.1%	17	3.6%
	25001 and Above Taka	14	3.3%	6	12.8%	20	4.3%
	Total	421	100.0%	47	100.0%	468	100.0%

It can be observed from the table 1 that column percentages are higher for Broadband as income categories are progressing. The Chi-Square Test of Independence calculated (not shown here) finds this association statistically significant. This is written as $\chi^2 = 10.801$; $p < 0.05$ (Fisher's Exact Test), Cramer's V = .165, a smaller than typical effect, according to Cohen's (1988) Classification (Gray & Kinnear 2012, pp. 425-432). The type of internet connection, therefore, is used as an independent variable in the model.

Services from the UDC

The UDC uses these equipment and internet to provide a range of services that are conventionally offered by the local government, the government and the private organisations and shops. Among these services a great majority are the UP service i.e.

online/computer composed certificates (birth, death, inheritance and character) along with other commercial services (compose, photocopying, printing, email, projector rent, skype, etc.) which account for nearly half of all UDC's income. The rest half comes from 11 types of services including education services (admission/registration/result check, etc.), computer training, UP office works and data entry. The government services such as land copy, electricity bill pay, passport and mobile banking earn less at this stage since they are not available everywhere. But their presence is found to have connotations for higher income from the UDC as is understood from the interview with entrepreneurs as well the correlation found $\rho(N, 527) = .157$ between it and the income. Thus, the government service⁴ is considered as a predictor in the model.

Entrepreneurship

The entrepreneurship of the private partner is presented here in terms of four variables such as his/her computer competency, contract with the UP, investment in the UDC and overall satisfaction on a number of issues.

Computer Competency

For both gender a large percentage of entrepreneurs (43.4%) have trainings less than 06 months among which 6.8% are operating without any formal computer training. Only a few have higher level trainings such as Diploma (7.8%) and Bachelor (4%). Higher computer competency has implications for spread of e-literacy in the rural area which is one of the important goals of the project and it also carries potential for earning from computer training of rural youths in the UDC premise. Hence, this variable is also considered in the model as a predictor.

Contract with the UP

Another component of entrepreneurship under public-private partnership is the execution of the contract with the UP which is a legal document that gives the entrepreneur a short term guarantee of job for 3 years (LGD, 2010). Only 57% entrepreneurs could enforce the contract with the UP, which is usually reluctant to do so. The percentage distribution (not shown here) demonstrates that monthly income are higher for entrepreneurs having a contract. To examine the association for population proportion the Chi-Square Test of Independence is calculated and found to be 11.406 which is significant beyond 0.05 level i.e. $\chi^2 = 11.41$; $p < 0.05$, Cramer's $V = 0.148$; a small effect. Hence, this variable is used as an independent one in the model.

Investment by the Entrepreneur

The amount of investment from the private sector in the UDC is very low. 47% of entrepreneurs have invested less than 20,000 Taka. 33% have an investment which ranges from 20000 to 100000 Taka. Only the remaining 20% entrepreneurs made an investment beyond that level. As per the contract, minimum required amount of investment in the UDC is 50, 000 Taka, equivalent to USD 650 (LGD 2010).1. Lack of entrepreneur's access to loan and poverty in the rural area impede desired investment in the UDC. Yet, those whose earnings are good tend to invest. There is also an association between investment and income, $\rho(522) = .281$; $p < .01$.

However, this correlation is moderated by another variable i.e. the internet connection type. For 'Dial-up or Mobile internet': $\rho(417) = .270; p < .01$. For 'Broadband': $\rho(47) = .568; p < .01$; a large effect. Money invested in the UDC by the entrepreneur is, thus, considered in the model as an independent variable.

Entrepreneur's satisfaction

Entrepreneur's satisfaction is also crucial to keep him/her in the business. Entrepreneur's satisfaction on certain issues such as income, people's participation, cooperation from UP and Local administration is asked in a rating scale of 5 ranging from 1= Very dissatisfied, 2 = Dissatisfied, 3= Neither Satisfied nor Dissatisfied, 4 = Satisfied and 5= Very Satisfied. The mean summary of the findings are presented in the table 3.

TABLE 2. DESCRIPTIVE OF ENTREPRENEUR'S SATISFACTION

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
People's participation in the UISC	237	1	5	3.89	1.240
Reduced time and cost in service delivery	183	1	5	3.28	1.286
Income from the UISC	283	1	5	3.04	1.178
Training and Other Technical Support from the local administration	180	1	5	2.98	1.273
Online service support from the local administration	173	1	5	2.75	1.330
Cooperation from the Union Parishad	269	1	5	2.45	1.244
Valid N (listwise)	0				

From the sorted mean (descended) presented in the table 2 it appears that entrepreneurs are satisfied most in people's participation followed by reduced time and cost in service delivery and Income from the UDC. Typically, they are less satisfied about training and other technical support and online service support from the local administration. They are least satisfied on the cooperation from the UP, which is noteworthy since it supports UDCs for office, equipment, operations, security, mass mobilisation etc. Overall composite mean from these variables is used as a predictor in the model.

People's Participation

Consistent with the entrepreneur's highest level of satisfaction with people's participation it can be supposed that UDCs are well participated in reality too. The percentage distribution (not shown here) suggests that 60% UDCs experience visits by people more than 200 in a month among which 40% are visited by more than 300 people. Only 6% UDCs provide services to less than 50 people. Considering the density of the country and the average number people a UDC serves in its catchment area (approximately 30000 people) this high level of participation is expected. As the country is one of the most densely populated one in the world the UDC enjoys a potential demand base compared to lack of it for many telecenters in other developing countries (Harris 2007). According to entrepreneurs, a significant portion of these people are disadvantaged such poor, illiterate and women. The visits by service recipients can have a significant bearing for the financial sustainability of the UDC. When calculated a significant correlation is found between entrepreneur's monthly income and the number of service recipients. This is written as: $\rho(449) = .442; p <$

.01, a medium effect. Thus, people's participation can be considered as an important factor for financial viability.

DISCUSSION ON THE DEPENDENT VARIABLE- THE MONTHLY INCOME OF ENTREPRENEURS

Entrepreneurs' monthly income is a crucial indicator of financial viability, which is associated with a number of variables as found earlier. The percentage distribution of average monthly income of entrepreneurs is produced in the following bar chart 1.

FIGURE 1. PERCENTAGE DISTRIBUTION OF AVERAGE MONTHLY INCOME IN LAST 3 MONTHS



The percentage distribution shows that 40% Entrepreneurs have an income of 5000 Taka (65 USD) or less than of it. Considering the monthly salary of UP Secretaries that ranges from 5200 to 11235 Taka (LGD, 2014) this income is lower. The field interview with management officials suggests that a majority of low income UDCs have to find new entrepreneurs either 2nd or 3rd time within the last 3 years largely due to entrepreneur's drop outs from lack of adequate income. But about 32% entrepreneurs can rival their UP Secretaries with an income that ranges from 5001 to 10000 Taka. The remaining 28% surpass the income of their supposed immediate senior official, the UP Secretary, among which more than 7% enjoy an impressive income of more than 20,000 Taka a month. The UP secretaries are permanent government employees who enjoy salaries according to the National Pay Scale (NPS). Since their salary starts from over 5000 Taka a month, as well as considering the prevailing unemployment rate and low paid jobs in the country Taka 5001 is considered here as the minimum sustainable income for entrepreneurs. This level of income is also sustainable since the UDC equipment is purchased by the government and some of its maintenance costs such as electricity bill, office rent, internet bill in some cases, are paid by the UP. Entrepreneurs are not asked to pay anything to the UP, at least for the initial 3 years, as per the contract (LGD, 2010). Whereas in other telecenter models the financial sustainability means the recovery of cost of infrastructure as well the operational cost (Shadrach and Sharma 2013), in Bangladesh the entrepreneurs are not encumbered with similar responsibility to reach break-even point since the government and the

local government are also partners with continued supports. Yet, the financial sustainability is desired since external funding cannot be taken for granted indefinitely and entrepreneurs are meant to bear the operating costs. It is expected that starting with at least 5001 Taka would help with the survival of the entrepreneur as well give him a chance to expand the business with subsequent investments over time. Our model presented in the next section ascertains factors contribute to this sustainable income level using the logistic regression. The variable 'Average Monthly Income' is dichotomised into binary of these two categories (Up to 5000 and 5001 and above Taka) for the reason mentioned above as well as for the highly skewed nature of the variable, where the use of regression coefficient is unsuitable (Gray and Kinnear, 2012).

SUSTAINABILITY OF INCOME OF ENTREPRENEURS

The sustainability of Income of Entrepreneurs is presented through the following model 1.

MODEL 1. LOGISTIC REGRESSION ON THE SUSTAINABILITY OF ENTREPRENEUR'S INCOME

Model 1				
	Variables	Odds ratio	95% CI	P values
Model 1	<i>Computer Competency</i>			
	< 6 months	Reference		
	>= 6 months	.776	.455 & 1.32	.349
	<i>Contract</i>			
	No	Reference		
	Yes	1.35	.826 & 2.22	.229
	<i>Internet Connection Type</i>			
	Dial-up or mobile	Reference		
	Broadband	1.94	.799 & 4.69	.144
	<i>Investment by entrepreneur</i>			
	No investment	Reference		
	<20000 Taka	.798	.326 & 1.95	.621
	20000-50000 Taka	1.59	.627 & 4.02	.330
	50001-100000 Taka	2.64	.914 & 7.60	.073
	> 100000 Taka	4.02	1.17 & 13.80	.027
<i>Picture Equipment</i>	2.08	1.50 & 2.87	.000	
<i>E-government Services</i>	1.26	.894 & 1.79	.186	
<i>Uddakta's Satisfaction</i>	2.13	1.47 & 3.10	.000	
Model 2				
	Variables	Odds ratio	95% CI	P values
Model 2	<i>Computer Competency</i>			
	< 6 months	Reference		
	>= 6 months	.794	.452 & 1.40	.425
	<i>Contract</i>			
	No	Reference		
	Yes	1.58	.931 & 2.68	.090
	<i>Internet Connection Type</i>			
	Dial-up or mobile	Reference		
	Broadband	1.71	.679 & 4.28	.256
	<i>Investment by entrepreneur</i>			
	No investment	Reference		
	<20000 Taka	.691	.262 & 1.82	.456
	20000-50000 Taka	1.50	.554 & 4.07	.424
	50001-100000 Taka	2.16	.691 & 6.81	.185
	> 100000 Taka	3.07	.806 & 11.72	.100
	<i>Picture Equipment</i>	2.22	1.56 & 3.16	.000
	<i>E-government Services</i>	1.15	.791 & 1.66	.468
	<i>Uddakta's Satisfaction</i>	1.80	1.22 & 2.67	.003
	<i>Monthly service recipients</i>			
	<=100	Reference		
	101-200	2.55	1.13 & 5.76	.024
201-300	3.47	1.51 & 7.96	.003	
301-400	6.64	2.52 & 17.51	.000	
401-500	7.47	2.54 & 22.10	.000	
>=501	8.90	3.34 & 23.70	.000	

Logistic regression was conducted to assess the impact of a number of factors on the likelihood that entrepreneurs would report that they had an income of 5001 and above Taka (sustainability level) as presented in the above model. There are 8 (eight) independent variables in the model ('computer competency', 'contract with the UP', 'internet connection type' 'money invested by the entrepreneur', 'average monthly service recipients in the last 3 months' are categorical variables; 'picture equipment' 'e-government services' and 'entrepreneur's satisfactions' are continuous variables

with composite means). The full model containing all predictors was statistically significant, $\chi^2(14, N=342) = 103.95, p < .01$, indicating that the model was able to distinguish between entrepreneurs who have 5001 and above and those who have 5000 or less Taka income from the UDC. The model as a whole explained between 26.2% (Cox & Snell R square) and 35.3% (Nagelkerke R square) of the variance in income status, and correctly classified 75.4% of cases, an improvement upon the baseline, intercept only rate of 58.8%. As shown in the above table (model 2) that three of the independent variables made a unique statistically significant contribution to the model (average monthly service recipients, picture equipment and entrepreneur's satisfaction). 'Money invested by the entrepreneur' was significant in the model 1 but became not significant when included with the 'monthly service recipients' in the model 2. The strongest predictor of having an income of 5001 and above Taka is the average number of service recipients in a month with the overall Wald value of 27.44. The odds ratios for all categorical variables > 1 indicate that moving from reference categories entrepreneurs are more likely to report to have an income ≥ 5001 Taka. For instance, entrepreneurs who have invested > 100000 Taka are 4.02 times (model 1) more likely to have a sustained income compared to those who have invested nothing in the UDC. Entrepreneurs who are visited by ≥ 500 service recipients are 8.90 times more likely to report to earn the sustained income compared to those who serve ≤ 100 people a month. Similarly, odds ratios for all significant continuous independent variables are > 1 indicating that for every additional increase in units of each of them entrepreneurs are more likely to report to have an income of 5001 and above Taka, controlling for every other factors in the model (Pallant, 2011; Gray and Kinnear, 2012). Four other independent variables are not found to be statistically significant at $p < .05$. Thus, our hypothesis that partnership involvement in terms of infrastructure inputs (equipment, internet connection and services), entrepreneurship (computer competency, contract, investment, satisfaction) coupled with people's participation contribute to the entrepreneur's income sustainability is partially supported.

From quantitative point of view we know that correlated independent variables cancel each other in the regression model (Gray and Kinnear, 2012). We have already noticed that most of these independent variables are correlated with each other and there are moderation effects too. From qualitative point of view we can also justify this stance. At this stage, the 'Computer competency' does not have any independent influence on the sustainable income. It might be because that many UDCs do not provide a lot of e-services that require higher computer skills. Likewise, contract with the UP does not play any significant role in explaining the dependent variable, perhaps, many entrepreneurs are not yet aware of it as nearly half of them are yet sign any such partnership binding. Similarly, the internet connection does not have any significant impact on sustainable income as for that Bangladeshi broadband is also slow. Furthermore, few available broadband connections are mostly mobile, not connected with fibre optics (Prothom Alo, 2013). Equally, the government services are available widely in UDCs.

CONCLUSIONS

Despite the precipitating trends of drop-outs of entrepreneurs, the sustainable income can cling them to the business and thus help with the sustainability of the model. Sustained income can also lead to investment, expansion and growth of the operation. The emphasis on income sustainability apparently has the least consequences of compromising of serving the people including those who are less able to pay since the UDC is engaged in retail business by earning from a massive number of people.

People's participation as the strongest predictor of the income sustainability validates this claim. Besides, infrastructure inputs and entrepreneurship of operators also play significant roles for income sustainability as the partial support of the hypothesis test suggests. The income sustainability can assist with the social sustainability too given other opportunity cost benefits for receiving services from the UDC are ensured. It can also lead to the technological sustainability which is very vital for the survival of the model. Thus, those UDCs that are performing below this threshold of income can increase inputs along these lines of components. However, as these inputs come from the interplay of relevant partners, hence, their effective engagement is crucial to ensure financial sustainability for preventing drop-outs and ensuring entrepreneurship development.

ENDNOTES

¹ The survey and interview were conducted by the researcher himself during April to August 2013.

² 4 UDCs are selected from each of 4 districts that belong to 4 greater old administrative divisions such as *Comilla* from *Chittagong*, *Jessore* from *Khulna*, *Bogra* from *Rajshahi* and *Rajbari* from Dhaka division.

³ The concept 'picture equipment' and others mentioned here are developed using the Exploratory Factor Analysis and the internal consistency for concept is found to be .564 using the Cronbach's alpha.

⁴ The concept 'Government Service' and others mentioned here are developed using the Exploratory Factor Analysis and the internal consistency for concept is found to be .750 using the Cronbach's alpha.

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