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THE ROLE OF ICT IN WOMEN'S EMPOWERMENT IN RURAL BANGLADESH

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Abstract. Rural women in Bangladesh have limited access to resources and public spheres due to socio-cultural restrictions. Women suffer from severe discrimination, and it is thought this is heightened due to a lack of access to information. Information communication and technology (ICT) is a potential tool that can reach rural women and enrich their knowledge. This paper discusses women's empowerment in terms of perceptual change in rural villages in Bangladesh after ICT intervention has been introduced by Non-Government Organizations (NGOs). Since empowerment is a complex phenomenon to measure because of its multidimensional aspects and its relationship with time as a process, the methodology used in this research was an integration of qualitative and quantitative methods. Using a structured questionnaire, data was collected from women in two different villages where ICT projects have been introduced. The change in women's perception after using ICT was compared with changes in women who did not use ICT. The results indicate that ICT intervention changed women's perception in a positive direction in one village but it did not change in the other village.

1. Introduction

Bangladesh is a poor country with 45% people living below the poverty line (Save the Children, 2008). Gender inequality, lower education, unemployment, income inequality, business failure, poor infrastructure, political instability and environmental degradation are the main causes of poverty in many developing countries like Bangladesh (Szirmai, 2005). If rural women in Bangladesh were educated and empowered using ICT tools such as computers, the Internet and mobile phones (UNPAN, 2007), then poverty could be alleviated and development would be possible in social, economic and all other levels of human life.

A study by Ahmed, Islam, Hasan, & Rahman (2006) found that, in Bangladesh, women's involvement in ICT industries and ICT-based government organizations (GO) and non-government organizations (NGO) changes the behavioural aspect of women's lifestyle and thereby affects the society as a whole. In another study on the impact of ICT intervention towards the development in third world countries, Ashraf, Hanisch & Swatman (2008) describe the situation in Bangladesh. This interpretive study discovered

that rural people were enthusiastic about ICT intervention despite its impact on the culture of the village. Although the focus of the study was the impact of ICT intervention on rural people generally, the study showed there are positive prospects in Bangladesh in terms of ICT use by women for their empowerment. In Bangladesh, ICT can play an important role in changing the social and cultural behaviour towards females, helping them to build their capacity to utilize their own potential, and educate them on various issues. Therefore, there is scope for research on this issue.

The research reported in this paper is part of a wider investigation on the issue of women empowerment through ICT tools in terms of change of perception. The aims of this paper are to:

- identify factors affecting women's empowerment;
- find the potential of ICT for women's empowerment;
- implement a model for measuring empowerment; and
- identify any perceptual change due to intervention activities.

2. Literature Review

2.1. WOMEN'S EMPOWERMENT

Empowerment refers to the ability of people to control their own destinies in relation to other people in society (Mason, 2005). There is no universal definition of women's empowerment as factors such as socio-cultural, geographical, environmental, political and economic, as well as many other aspects of countries and regions, influence it. Kabeer (1994) offers a definition of empowerment as:

the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them.

According to The World Bank (2008):

empowerment is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes.

So, one definition of women's empowerment could be a process that gives them control of power and resources, and changes women's lives over time through their active participation in that process.

Empowerment dynamics is a complex and multidimensional process linked at the macro, meso, and micro levels (Narayan-Parker, 2005). Macro level dynamics (i.e. global, national or regional level) directly affect the micro level (i.e. the individual or domestic level) as does the meso level (i.e. village or community). A connection between the levels is needed to ascertain women's empowerment intervention (Mason, 2005). The domestic or household level is the central point of gender-based discrimination and the goal of empowerment (Narayan-Parker, 2005) because of the power relation in the family hierarchy. Domestic power dynamics can be analysed by an individual's access to and control of different 'spaces' such as physical, economic, socio-cultural and political, and non-physical within the domestic level. A new space of

women's empowerment is technological empowerment, which is as important as the other interrelated spaces (Lennie, 2002). Shifts in spaces are closely connected to changes in the micro, meso and macro environments, both backward and forward. For that reason, women's empowerment needs to be measured in all three dimensions and all spaces of women's life (Charmes & Wieringa, 2003).

The mental space of women remains the most critical issue since it has a complex relationship with other non-mental spaces. Mental or psychological space consists of the feeling of freedom that allows a person to think and act. For example, it often happens that interventions that expand a woman's economic space with increased income do not empower her if she has no control over the income. Therefore, expansion in economic space alone will not bring about empowerment. If the interventions increase a woman's level of confidence and self esteem, then a process of empowerment has began. An expansion of this space implies a change in perception and leads to a feeling of strength. Hence, understanding the link with other spaces will help policy makers to understand why some interventions fail in spite of an increase in physical, economic and political spaces (Ranadive, 2005). Though some ICT interventions in Bangladesh are not benefiting rural women economically (Alam, 2006; D.Net, 2007), they are helping to provide required information to rural women, which eventually changes their perceptions and expands their self-esteem as human beings. This issue needs to be investigated; that is, whether ICT can empower rural women with or without economic benefit.

2.2. THE NEED FOR WOMEN'S EMPOWERMENT

The World Bank (2001) developed a two-pronged strategy to eradicate poverty: large scale investment in developing countries; and empowerment of underprivileged people. Therefore, disadvantaged people have the potential to develop their lives and eradicate their poverty if they are empowered. Women are half of the total population in the world yet 70% of the world's disadvantaged are women (Actionaid, 2006). Many women are the poorest of the poor because of the extreme forms of discrimination that persist in many parts of today's world (Obayelu & Ogunlade, 2006). Women are, therefore, not only the representatives of impoverished people in the world but they are also the most deprived and the cross-cut category of individuals that overlaps with all other disadvantaged groups (the poor, ethnic minorities, etc). Although actively participating in taking care of children, family members, livestock and agricultural work (food production, preservation and processing), household work, health care and so forth, women have limited access to resources and economy.

The World Bank (2008) has identified empowerment as one of the key constituent elements of poverty reduction and sustainable development. So, it is important to empower women to change their lives through eradicating poverty and enabling their contribution to society.

2.3. POTENTIAL OF ICT FOR EMPOWERING WOMEN

Information is noted as a prerequisite for empowerment, while participation drives empowerment by encouraging people to be actively involved in the development process, contribute ideas, take the initiative to articulate needs and problems and assert

their autonomy (Obayelu & Ogunlade, 2006). The UN millennium development project (United-Nations, 2005) focused on globalization as well as gender equality and empowerment of women as effective ways to combat poverty in a sustainable way. Women's full and equal access to ICT-based economic and educational activities support women's contribution in business and home-based activities and help women to become more empowered. By accessing information, women can enrich and enhance their quality of life.

The United Nations Division for the Advancement of Women (UNDAW) focuses on "ICTs and their impact on and use as a tool for the advancement of women" (Marcelle, 2002). Successful case studies from many countries describe the use of ICT as a tool for the economic empowerment of women (Prasad & Sreedevi, 2007), participation in public life (Lennie, 2002), and enhancing women's skills and capabilities in society (Mitchell & Gillis, 2007). When used effectively, ICT can create better opportunities for women to exchange information, gain access to on-line education and to engage in e-commerce activities (Marcelle, 2002).

2.4. FACTORS IN WOMEN'S EMPOWERMENT

Generally, two key factors in the process of empowerment are identified: control over resources (the conditions for empowerment); and agency (the ability to formulate choices). From the conceptual framework discussed by Malhotra, Schuler & Boender (2005) (Figure 1), it can be understood that empowerment is a dynamic process that may be separated into components, such as enabling resources, agency and outcomes.

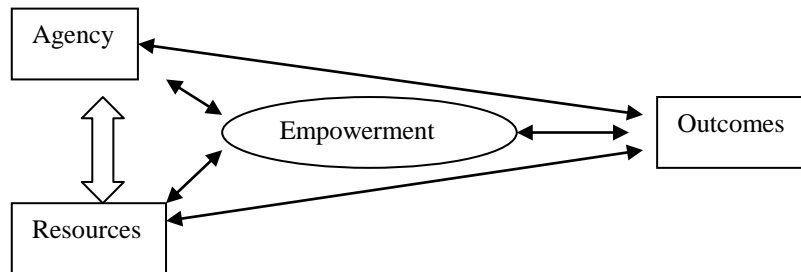


Figure 1. The conceptual framework showing relationship between resources, agency and outcomes correlating empowerment (adapted from Malhotra et al., 2005).

Alternatively, the consolidated framework developed by Chen (1997) details four broad pathways through which individuals' experiences change:

1. *Material pathway*, through which changes in access to or control over material resources, such as in the level of income, in the satisfaction of basic needs or in earning capacity, are experienced.
2. *Cognitive pathway*, through which changes in level of knowledge, skills or awareness of wider environment are experienced.

3. *Perceptual pathway*, through which changes in individual confidence level and self-esteem and vision of the future as well as changes in recognition and respect by others are experienced.
4. *Relational pathway*, through which changes in decision-making roles, bargaining power, participation in non-family groups, dependence on others and mobility are experienced.

To fully understand the process of change, Chen (1997) details two types of variables: the key participation variables (i.e. demographic profile of the client, household dependency ratio and the economic portfolio mix of the household) which are designed to measure the different levels of contact that a woman might have with various services offered by micro enterprises; and the mediating variables (i.e. social norms such as gender division of labour, gender norms of behaviour and gender allocation of resources), which are thought to affect the direction and strength of the relationship between participation in micro-enterprise services and impacts on individual level. This framework is useful because it reflects the culture and context of rural Bangladesh for measuring women's empowerment.

In the model, developed by Lennie (2002), a new dimension of women's empowerment was added, that of *technological* empowerment. Other dimensions, such as social, political, and psychological empowerment are also interrelated. The questions which were used to identify the changes in women's technological issues after using ICT were incorporated in this study since ICT affects the mental space of women.

2.5. MEASUREMENT OF WOMEN'S EMPOWERMENT

Though ICT is used for women's empowerment in many countries in Asia, Africa and other developing areas in the world, there is no rigorous method for measuring and tracking changes in levels of empowerment by ICT intervention. For example, multiple research methods (including participant observation, individual interviews, group interviews, analyses of selected email messages, feedback questionnaires that provided qualitative and quantitative data, and statistical analysis of demographic and personal information) were used to investigate empowerment and disempowerment of rural women in Australia, a developed country (Lennie, 2002). The key activities in the project were workshops, online conversation groups and audio conferences. In another study in India (a Kudumbhasree project), a research report was based on primary and secondary data analyses from the IT industries, ICT-promoting GOs and NGOs, IT professional and related websites. This case study was conducted to ascertain the success factors of the project through an analysis of strengths, weaknesses, opportunities and threats (SWOT) within the project (Prasad & Sreedevi, 2007).

As noted above, empowerment of women is considered in two ways: as a *process* through which there is a change for greater equality or greater freedom of choice; and *action*. Empowerment is also considered as *agency*, where women themselves must have significant involvement in the change process that is being described or measured. However, processes are difficult to measure; they cannot be measured directly but through proxies, like health, educational level, and knowledge. Mason (2005) argues that women's empowerment in developing countries should be confined to the domestic environment and be measured and analysed through the effectiveness of any intervention

in that space. Ranadive (2005) countered that it is difficult for the researcher to carry out detached observation at the domestic level. Women may not report discrimination for their own safety or for the good of the family. Therefore, a framework needs to be developed that can be used across settings to address empowerment at the meso as well as the macro and micro levels, thus covering economic, socio-cultural, familial, legal, political and psychological dimensions of women's life in the context of different countries and cultures.

Chen's (1997) mixed method approach, combining a qualitative case study with a quantitative survey to test hypotheses of the impact of micro-enterprises at the individual level, applies the consolidated framework discussed above and is ideal to measure the empowerment of women using ICT in Bangladesh. In this approach, a quantitative survey can measure broad patterns and correlate the changes, whereas case studies can illuminate the impact process, counter factual or rival explanations, and investigate complex or unexplained phenomena.

3. Methodology

This research focuses on individual level impacts. Therefore, the unit of analysis chosen is individual people, i.e. women, and involves interviews with rural women, ICT trainees and members of ICT interventions projects. This is an effective way for collecting original data and for measuring attitudes and the impact of ICT intervention in women's life.

Since women's empowerment is a complex entity to measure, Chen's (1997) conceptual model is considered appropriate because it has been developed for South East Asian countries like Bangladesh and India, where socio-cultural norms are similar and women suffer similar types of discrimination in rural areas. The research model used in this research is designed in such a way that it illuminates all spheres of women's life and identifies what data to collect for analysis. Taking the concept of women's empowerment of agency, resource and outcome in mind (see Figure 1), the research model (Figure 2) was developed taking the pathways of Chen's (1997) consolidated framework and Lennie's (2002) technological change to measure empowerment.

As illustrated in Figure 2, the independent variables, such as personal characteristics (education and age) and motivation (type of information, purpose of involvement, and access level), are different for each woman. These variables affect dependent variables like material, relational, cognitive, perceptual and technological change. For example, an educated woman can learn ICT skills more easily and acquire more knowledge and skills than a woman without education and can therefore perceive changes. Similarly, all other factors like age, purpose of involvement, access to ICT, and information type may affect women's knowledge and skill gained through ICT and affect the changes leading to empowerment as well. This paper will focus specifically on women's purpose of involvement in ICT projects and how it affects women's perception leading to empowerment after ICT intervention.

As this research aims to investigate women's empowerment through technological intervention in rural Bangladesh, it adopts an interpretive perspective. ICT intervention

for women's empowerment is a relatively new issue and therefore needs to be examined for the appropriate application of technology for social inclusion.

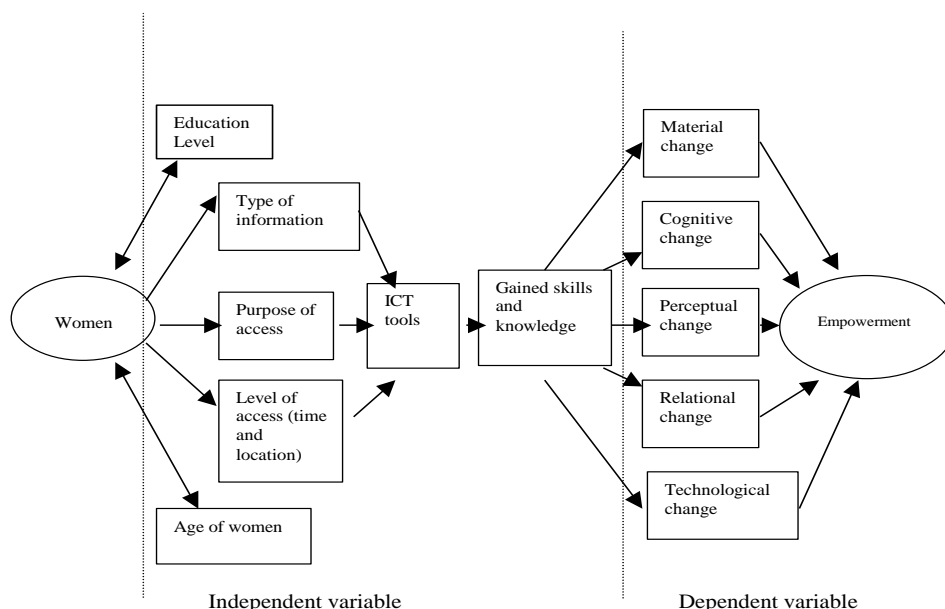


Figure 2. Proposed model for measuring empowerment for ICT intervention (based on Lennie, 2002, Ahmed et al. 2006 and Chen, 1997)

The research design is based on a questionnaire, one of the most common research methods used for social research (Babbie, 2001), and a comparison of similar sample groups without researcher intervention.

Seven questions were asked of rural women to identify perceptual changes after ICT intervention. The women were asked to rate their perceived change on a Likert-like scale. The questions were:

1. Are you able to speak about your problems without any fear?
2. Do you have enthusiasm and inspiration for any work?
3. Are you aware about women's problems and rights in the society?
4. Do you think that other people in the family and in the community respect you?
5. Are you free to do any work without any pressure from your husband or other family members?
6. Do you feel dominated by other family members like husband or in-laws?
7. Are you able to do anything on your own without the help of other?

The same questions were asked of non-ICT women. Even though they were not involved in the ICT projects, they may have experienced changes as other women in the neighbourhood were engaged in those ICT projects. Therefore, their feelings about ICT and its impact on their lives were also investigated.

3.1. CASE STUDIES

Searching the web about ICT for women's development in Bangladesh, several appropriate projects were identified. After communicating with key personnel through email and formal application, two projects — Development Research Network (D.net) and Our Village Online (Amader gram online) — gave permission to work with their beneficiaries. Both projects were at their early stage of ICT intervention and eager to learn the outcome of their research through feedback.

A convenience sample was chosen based on women who were interested in being interviewed. With the help of project field workers and volunteers, who provided information about project beneficiaries using ICT and not using ICT, data were collected by going from house to house and asking who was available and prepared to give an interview. In addition, student trainees and project staff were interviewed at the project offices. At D.net and Amader Gram project offices, non-ICT participants were also interviewed along with ICT participants. Figure 3 shows the location of the participating villages.

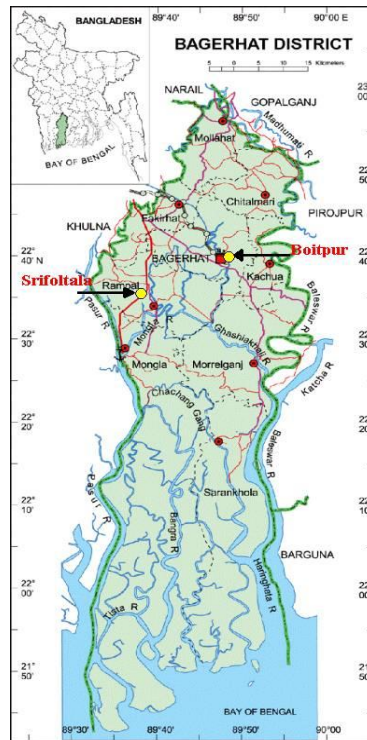


Figure 3. Location of ICT projects in Bagerhat district in Bangladesh (Bagerhat.net, 2009)

Since 2002, the D.net project has been working with children, youth and women to increase health care, education and social awareness. Under the Computer Learning and Education Program, this organization has been working since 2005 to teach students and

youths of the village about computers. Through this project, a student or trainee can learn computer skills and attain a certificate from Microsoft under the curriculum of Microsoft Unlimited Potential. The program also disseminates information among villagers, especially to rural women, through computers, Internet and movies. Specialist advice for health is passed on through mobile communication. The project provides information to villagers depending on the livelihood problems and the needs of rural people. The information on livelihood includes problems which people in the village face in their everyday lives such as communication, agriculture, health, education, employment, sustainability, human rights, natural disaster management, government forms and provision of services (D.net, 2007). In 2007, there were 16,000 participants in their project of whom 10,000 were female participants in the Bagerhat sub-district.

In the village of Boitpur where the D.net project has been established, 20 women who were using ICT tools like mobile phones, computers, or the Internet and were beneficiaries of the Village Information Project, were interviewed. Another 30 women in the village, who were part of D.net but not part of the ICT project or who were not part of any project, were also interviewed.

Though Amader Gram was established in 1998 in Srifoltala village, since 2003 it has been working to motivate the young generation morally, and change their mindset through ICT education. The six programs on which they are working are: (i) Breast Cancer; (ii) Amader Gram Database Program; (iii) Knowledge Center; (iv) Literacy for Livelihood; (v) Monitoring and Evaluation; and (vi) Rural News Online. They have about 691 enlisted beneficiaries in Srifoltala village.

In the Amader Gram online project in Srifoltala village, 20 women were interviewed who were participating in the project using Telemedicine or ICT for education and knowledge. Seventeen other women in the village who were not using computers or the Internet for education and knowledge agreed to participate. Mobile phones were available to these women, generally for communication.

4. Analysis

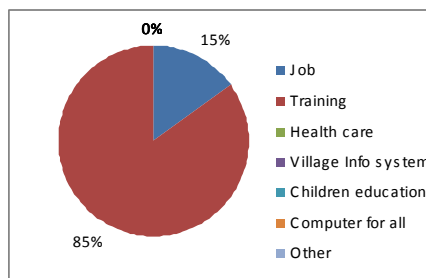
As noted in Section 3.1, the data was collected from participants using convenience sampling from two different villages in Bangladesh. The interviewees were rural women whose demography is given in Table 1. It can be seen that the highest percentage of women respondents were from age group 21–30 years (61%). Most of the women were married (77%) and had no employment (67%) outside the home. On the other hand, although a high percentage of women have some form of education and can read (80.46%), only a small percentage of women who can read had completed secondary school (10%) or higher secondary education (24.3%). The majority of women can use a mobile phone as an ICT tool (83%), but only few women could use the Internet (14%) and computers (17%).

From Figure 4(a), it can be seen that the purpose of involvement in ICT projects in the two villages is quite different. In Boitpur, as most of the ICT women are student trainees and employees of the project, they can use a computer, and the Internet and they are involved in paid training programs of at least 3 months. So, they are gaining more knowledge and education because of the depth of project purpose. On the other hand,

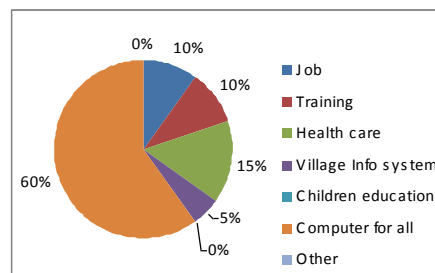
from Figure 4(b), it can be seen that in Srifoltala village, there are combinations of various categories of purpose of involvement for women. Most of the women participated in the ‘Computer for all’ program, which is a one-day program to introduce computers to rural people. In this program, project staff members carry a computer on a three-wheeler from door to door, to show groups of people what the computer is, how it works, how important it is and engage the women by allowing them to touch it and use it so that their fear of new technology can be eliminated.

Table 1. Demographics of participants (N = 87).

Demographics		Boitpur		Srifoltala		Total (N = 87)
		ICT (N = 20)	Non-ICT (N = 30)	ICT (N = 20)	Non-ICT (N = 17)	
Age group	< 20 years	6	0	0	0	6
	21-30 years	13	18	14	8	53
	31-40 years	1	10	3	5	19
	41-50 years	0	2	2	4	8
	>50 years	0	0	1	0	1
Marital status	Married	10	27	16	14	67
	Single	10	2	4	2	18
	Other	0	1	0	1	2
Level of education	Unable to read	0	3	5	9	17
	Non-formal schooling	0	5	2	1	8
	Primary school	0	6	3	3	12
	Lower secondary	0	8	5	2	15
	Secondary school	1	4	2	0	7
	Higher secondary	10	4	1	2	17
	Post-secondary	9	2	4	1	16
Employed	Yes	12	5	5	7	29
	No	8	25	15	10	58
ICT use	Mobile	15	22	20	15	72
	Computer	7	4	4	0	15
	Internet	10	0	2	0	12



(a) D.net (Boitpur)



(b) Amader Gram (Srifoltala)

Figure 4. Purpose of involvement in ICT project.

From Figure 5(a), it can be seen that the purpose of involvement in Boitpur for most of the women without ICT is the village information system (90%) and only few are taking advantage of children education and health care. So, non-ICT women are also being advantaged indirectly from ICT through field workers of the project who move from door to door and inform rural women about their livelihood problems. On the other hand, from Figure 5(b), it can be seen that in Srifoltala village, though the Amader Gram project has a village information system, the women without ICT tools are involved in various programs such as micro-credit loan program (33%) and health care program (28%). Therefore, their programs are focusing on various issues instead of training and learning.

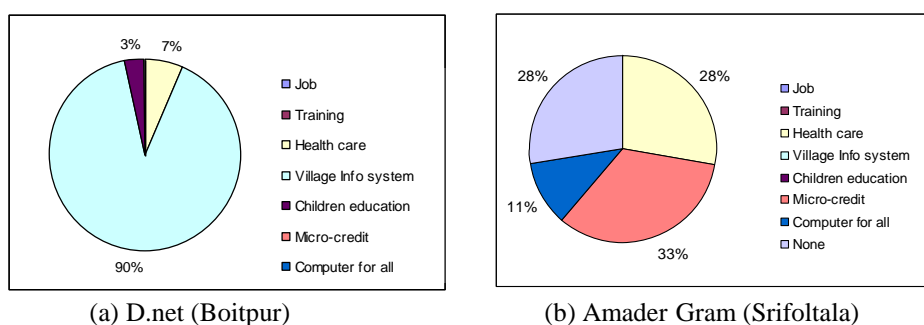


Figure 5. Purpose of involvement in non-ICT project

5. Discussion of Results

The responses to the questions exploring perceptual changes are plotted in Figures 6, 7 and 8, using average values to compare women who are using ICT tools with women who are not. It can be seen from Figure 6 that women with ICT skills have a higher confidence level, more self-esteem, self-awareness and dignity, and they feel freer and much more independent than non-ICT participants in Boitpur village under the D.net project. But for the Amader Gram project (Figure 7), there is less change in women with ICT. These women are showing less confidence, self awareness, dignity, freedom and independence than non-ICT participants. Only self-esteem is slightly more than non-ICT participants. When we compare the two groups of ICT users’ perceptual change (Figure 8), we find that D.net ICT users are showing a higher perception of empowerment than Amader Gram users in Srifoltala village except for the category of self awareness. But it is interesting to note that average changes in all cases are more than the average value, which is “no change”. This is a positive sign for ICT intervention projects.

The development of ICT skills in women is said to produce perceptual changes in their mental spaces, such as level of confidence, self esteem, self respect, freedom and so on (Chen, 1997). The analyses in this research give us an interesting insight. The results show that, after gaining knowledge and ICT skills, women’s perceptual change is higher in the D.net project than the Amader Gram project.

The reasons for this differential result could be the depth of involvement in the project, i.e. purpose and length of involvement in the project by the participants. The

average length of involvement for students and trainees in the D.net project is 106 days (i.e. more than the minimum 3-month program described above), whereas the average length of involvement for students, trainees and “computer for all” participants in Amader Gram project is 14 days. So, it is important that ICT projects working with rural women look at their needs and inspire them to become involved in the project more actively and for a longer length of time to benefit rural women. Though women in Srifoltala village have computer and Internet facilities within their village, they are not getting the full benefit of ICT for enriching their knowledge and education because of the lack of active participation in the projects. So, the ICT project in Srifoltala is failing to meet their goal to empower women in that rural village.

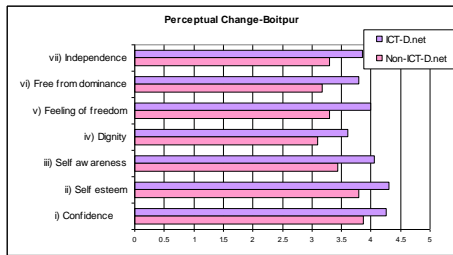


Figure 6. Average perceptual change of ICT and non-ICT respondents of D.net project.

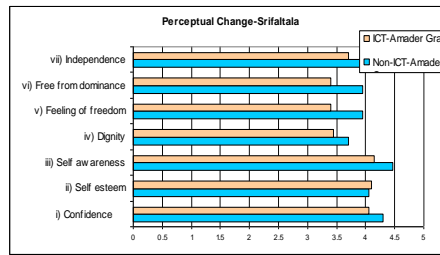


Figure 7. Average perceptual change of ICT and non-ICT respondents of Amader-gram project.

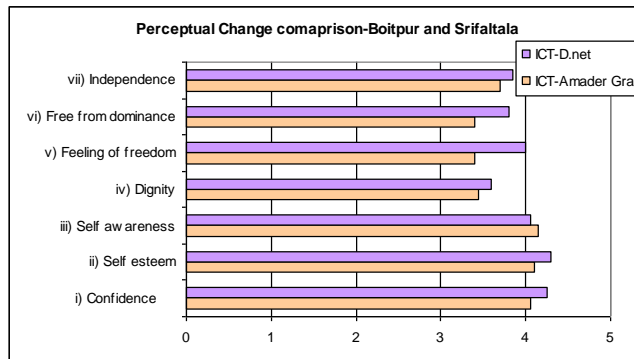


Figure 8. Average perceptual change of ICT D.net and ICT Amader Gram Projects respondents.

6. Conclusion

This paper discussed the issue of women empowerment using ICT tools, and a model was developed to measure perceptual change in women’s mental space leading to empowerment. Even though the result was not positive in one village, we can conclude that if women’s engagement in ICT is active and in-depth in terms of learning and

education, then women could become more empowered. Moreover, poverty could be alleviated in rural populations in Bangladesh by women acquiring knowledge and education.

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