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E-learning and wellbeing of those in poverty in Bangladesh

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ABSTRACT

Despite increased use of e-learning in formal learning, those in poverty in rural Bangladesh have inadequate idea of it and its usefulness in their lived reality. My research examines how e-learning can support to enhance their sense of wellbeing. I conducted a qualitative case study to understand: how capability development is related to e-learning, the resource requirements for e-learning, the roles of community, and social embeddedness aspects of e-learning. Drawing on the concept of capability approach, I developed my arguments based on the views shared by respective users of e-learning, project officials, government officials and experts in the areas of ICT and development.

My research shows that, in principle, e-learning can foster rural people's wellbeing by offering freedom of learning through ICT. In the process of learning and developing awareness, skills, and knowledge, e-learning can help them to deal with labour intensive lifestyles, poor economic status, gender inequalities, and limited institutional provisions for informal and formal means of learning. However, it depends on certain vital factors to work as a means of wellbeing in rural Bangladesh. These are: access to ICT, trust, local support, content, and funding. It needs a particular configuration of these factors with a specific arrangement of the related resources, in a setting where social embeddedness aspects are appropriately integrated. However, it is effective only when a trusted knowledgeable local support is involved who can support a framework of informed e-learning - which is my key claim in this research. This distinctive local support can assist rural people with access to e-learning, making sense of the content, and trusted access to new knowledge, to enable them take informed approach towards e-learning. This framework of informed e-learning provides a means of understanding how rural people in Bangladesh want e-learning as a means of wellbeing in their lived realities.

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TABLE OF CONTENTS

(continued)

(continued)

(continued)

List of Tables

List of Figures

Chapter 1
Introduction

1.1. Introduction

My research studies how e-learning can enable rural people, living in situations of poverty in rural Bangladesh, achieve their wellbeing. I consider e-learning that can take place with the help of electronic means, including computer, Internet, television, mobile phones and radio. E-learning provides the opportunities for learning, and the development of awareness, skills and knowledge, which associate the lives and livelihoods of those living in situations of poverty, and can be seen to correlate with their wellbeing achievement. I take a bottom-up approach in conceptualising this particular aspect of e-learning, where it can bring the developmental outcomes which lead to wellbeing achievements.[1] I use Amartya Sen's (1999) perspective of development, which conceptualises it as real freedom that one can experience in achieving her/his valued and desired state of being or doing. The understanding of e-learning in my research does not reflect the dominant aspects of it, which are mostly correlated with formal education (Collis & Moonen 2001; Gulati 2008; Meredith & Newton 2003; Salmon 2000, 2004) and learning at organisational level (Bowles 2004). In my research, e-learning encompasses the broader notions of learning, but focuses mostly on informal means of learning, which is relevant for ordinary rural people in Bangladesh.

It is essential to define what I refer to as informal learning, because informal learning can be understood in a number of ways, and its influence over wellbeing inextricably depends on how it is conceptualised (Michalos 2008; Schugurensky 2000). The informal aspects of e-learning in my research are grounded in the following characteristics:

- It is less structured than learning experiences at educational institutions. It is outside the curricula of educational institutions but not necessarily outside the educational institutions themselves. (Schugurensky 2000).
- It is not facilitated through a teacher/student approach, but rather based on the notion of sharing knowledge. Although it can include facilitators, the ownership of learning,

[1] Development, in a general sense, is about making a better world for those living in situations of poverty (Chambers 2004). In a broader sense, which I adopt for this research, development is seen in terms of the freedom an individual can have in availing a state of being or doing s/he values to pursue in a given society (Sen 1999).

with regard to who controls and makes decisions, remains with the learners (Folkestad 2006).

- It includes self-directed or group based collective learning, where the latter could be supported by a facilitator.
- It does not offer any certificate to the learners, which educational institutions or other initiatives do.

The electronic means I associate with e-learning can be categorised as information and communication technology (ICT). [2] In addition to the new technologies, such as computers, mobile phones and Internet; older technologies, such as radio and television are now considered as ICT. [3] This broad definition of ICT allows this research to incorporate the lived realities in developing countries[4] where these older technologies remain socially embedded (Heeks 2008). Reflecting on the nature of my research inquiry, and the relevancy of ICT in it, my research can be categorised under the broader umbrella of ICT for Development (ICT4D), which is an emerging interdisciplinary area of research, though with an inadequate understanding of its interdisciplinarity (Heeks 2006, 2008).

In my research, I adopt Sen's (1985, 1999) concepts of poverty and wellbeing. He conceptualises poverty in a broader aspect, as lack of capability to function in a given society. Here, capability refers to an individual's freedom "to achieve functionings[5] that he or she has reason to value" (Sen 1992, p5). In his view, notions of poverty go beyond the material perspectives and accommodate diverse realities, facing those in developing countries. His concept of wellbeing also incorporates capabilities, where wellbeing refers to a state that is about achievement of human capabilities or substantive freedom, which people value in a given society. His concept postulates that wellbeing is connected to socially shaped values and expectations, which therefore correlates reasonably with the wellbeing of those living in situations of poverty in the collectivist

[2] While e-learning in my research implicates involvement of all types of electronic means that can be used for learning purposes, for the sake of simplicity, while presenting my arguments, I use the term e-learning to refer to computer and Internet based e-learning. In the other cases, I explicitly mention the means of e-learning, such as television based e-learning or radio based e-learning.

[3] In rural Bangladesh, most of the televisions used by rural people are not digital. Significant use of older technologies in developing countries influenced reinterpretation of ICT and incorporated radio and television in ICT4D (Heeks 2008).

[4] Bangladesh was considered as a developing country when I conducted my field work in 2014. However, in the recent World Development Indicators 2016 of the World Bank, this categorisation approach is discontinued by the World Bank. It has stopped grouping countries into developed and developing categories (World Bank 2016). However, I use the term developing country in order to associate its commonly known implications.

[5] A few instances of functioning can be: having a healthy life, having nutritious food, and being able to go to school for education.

rural Bangladesh (Deci & Ryan 2008; Devine, Camfield & Gough 2008). I use Sen's (1985) capability approach framework to interweave these theoretical underpinnings around the related concepts while conceptualising e-learning as a means of achieving wellbeing for those living in situations of poverty in rural Bangladesh.

1.2. Research context

Bangladesh is a South Asian country of rural agrarian economy, which is globally known mostly for its contribution to the supply of ready made garments (BBS 2010; Hassan & Das 2015; Huq, Stevenson & Zorzini 2014). It is one of the most densely populated countries in the world, with about 160 million people (as of April 23, 2016) living in 147,570 square kilometres (BBS 2011, 2016). About 31.5%[6] people in Bangladesh live in situations of poverty, and it was 40% in 2005 (BBS 2010). Despite improvements for those living in poverty situations in the last decade, the country is known as one of the poorest countries of the world.[7] The majority of the people (about 79.3%) live in villages (BBS & UNICEF 2014). In rural areas, agriculture offers the majority of the livelihood opportunities, engaging 36.1% of the total population (BBS 2010; Hassan & Das 2015). Agriculture thus plays a pivotal role in rural people's quality of life, and thereby their wellbeing achievements. As a result, opportunities for learning, particularly in the areas of agriculture, are crucially important for rural people.

Rural people in Bangladesh usually learn about lives and livelihoods through informal learning opportunities, such as by doing and/or through observations, with the help of local people (Ahmed, A.U. 2004; Khan, F.C. 1997; Paris *et al*. 2005). This approach towards learning through informal means is underpinned by the collectivist rural realities (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995). It is argued that innovative technological means can effectively support similar learning patterns, particularly with the help of ICT (Arrow 1962; Bof 2004; Jensen *et al*. 2007; Lundvall & Johnson 1994; Rao 2011). However, in Bangladesh, technology supported informal learning opportunities (which I conceptualise as e-learning, as discussed above) have mostly been adopted to foster formal learning and usually for the educated people (Grönlund & Islam 2010; Islam & Selim 2006; Karim, Mina &

[6] It refers to rate of poverty based on the upper poverty line measurement, which measures poverty situation based on costs of selected food items for 2122 kilocalorie daily intakes and costs of essential non-food items required to meet basic needs of a household.

[7] In Bangladesh, poverty is measured following the Cost of Basic Needs (CBN) method. Poverty is measured with respect to the cost of a bundle of food and non-food goods and services at local prices that are typically consumed by a person living in situations of poverty (World Bank 2005).

Samdani 2011; Khalid & Nyvang 2013; Mridha *et al*. 2013; Walsh 2011; Walsh *et al*. 2013). This limited and selective utilisation of e-learning is deeply-rooted in the urban experience as it usually involves high-tech ICT[8] options, such as computers and the Internet, and uptake of these options are comparatively very low in rural areas (BBS 2015a). As a result, the current approach towards conceptualising e-learning, as a means of formal learning for educated people, might eventually make high-tech ICT based e-learning irrelevant for rural people in Bangladesh.

The Government of Bangladesh (GoB) has been promoting ICT and adopting different initiatives to implement its 'Digital Bangladesh by 2021'[9] agenda, in order to establish good governance and to foster socioeconomic development (GoB 2009a; GoB & UNDP 2010; Hasan 2014). However, most of its initiatives are around e-governance and are developed in order to deliver services rather than e-learning opportunities. Nonetheless, this approach from GoB towards integrating ICT with people's lived realities has created an avenue to conceptualise e-learning as a means for rural people to pursue informal learning around lives and livelihoods. As the international development sector also considers informal learning as one of the development tools that can help the achievement of sustainable development goals (SDG), a new perspective of e-learning is required in order for the rural people in Bangladesh to accept it as a means of learning (UN 2015).

1.3. Significance of my research

There are three reasons that show the significance of my research. Firstly, it is a timely initiative given that the government of Bangladesh (GoB) considers ICT as a priority sector and has been taking different initiatives to implement the 'Digital Bangladesh by 2021' agenda (GoB 2009a; GoB and UNDP 2010; Hasan 2014). While the majority of these initiatives offer different government services, there exists no consistent institutional initiative, from where ordinary rural people can pursue informal learning and develop awareness, skills and knowledge in the areas of lives and livelihoods to achieve their wellbeing. Furthermore, for ordinary rural people, access to formal learning opportunities through educational institutions, government institutions, and different project based initiatives are challenged by barriers such as rural people's

[8] While high-tech ICT includes Internet and computer, low-tech ICT includes radio, television and mobile phone (Fors & Moreno 2002).

[9] Access to Information (A2I) and Union Information and Service Centre (UISC) are two flagship initiatives from the GoB under its vision of Digital Bangladesh by 2021 (GoB & UNDP 2010, Faroqi 2015, Alam & Brooks 2014).

labour intensive lifestyle, poor economic status, and persisting patriarchy[10] (Cain *et al.* 1979; Chowdhury 2009; Kabeer *et al.* 2011; Mitter & Ng 2005). Under these circumstances, my research might find a new perspective around e-learning as being a convenient means of learning.

Secondly, my research will bring out new ideas to support the development of knowledge, skills and awareness through the use of audiovisual or video content in e-learning, which can minimise the literacy barriers ordinary rural people face in this regard.[11] Those ideas can play a pivotal role in enabling rural people to develop knowledge, skills and awareness, relevant to their lived realities, given that only about half of the total population in Bangladesh are literate and the majority of them live in rural areas (GoB 2011).

Thirdly, my research will consider a new perspective on the concept of e-learning, as a means of informal learning for rural people in Bangladesh. Although the majority of them are not considered as educated (GoB 2011), this will position them as active recipients of knowledge, which is also emphasised by scholars when e-learning is concerned (Haythornthwaite & Andrews 2011). My research is important in extending the predominant conceptualisation of e-learning, around its suitability for formal education, and appropriateness for educated people (Brown & Charlier 2013; Collis & Moonen 2001; Liaw 2006; Meredith & Newton 2003; Ravenscroft 2001; Salmon 2000, 2004; Vargas & Tian 2013). Given that knowledge and development are intimately connected, if e-learning can work as a means of learning for these rural people, then it could bring positive changes in their lives, and thereby in their wellbeing achievements (Coombs & Ahmed 1974; OECD 2001; Waage *et al.* 2010).

1.4. Aim, objectives and research questions

The aim of my research is to conceptualise e-learning as a means of wellbeing achievement, particularly for those living in situations of poverty in rural Bangladesh. I conform to the ideology that those living in situations of poverty, who accept development supports, are not passive recipients but rather active agents (Lipton 1979; Sen 1999), and thereby are active recipients of knowledge, where e-learning is concerned (Haythornthwaite & Andrews 2011). From this position, I apply a bottom-up

[10] Patriarchy is a "system of social structures and practices in which men dominate, oppress and exploit women" (Walby 1990, p20).
[11] Contents are digital files in the forms of text, audiovisual and video clip.

approach to understand how those living in situations of poverty make sense of e-learning, and how this enables them to achieve a sense of wellbeing.

Aided by my literature review, I have set the following three objectives in order to meet the aim of my research.

- To understand how learning relates to improving wellbeing in rural realities.
- To understand how rural people can manage the resources required for e-learning.
- To understand how e-learning needs to be embedded in the rural reality.

As e-learning has not yet been conceptualised as a means of wellbeing, the first objective forms the basis by addressing the relationships between learning and wellbeing, and then correlates e-learning. The second and third objectives introduce practical aspects of how e-learning, in the particular rural setting in Bangladesh, can work as a means of learning and development of awareness, skills and knowledge for those living in situations of poverty.

Based on the aim and objectives of my research, and review of related literature, I develop four research questions in order to address my research inquiry. The central research question of my research, which underpins the three supplementary questions, is: **how might learning through electronic means (e-learning) address wellbeing of those in poverty in Bangladesh?** As I frame my research based on Sen's capability approach framework, where he conceptualises poverty and wellbeing in terms of capability and functionings, I need to first understand the relationships between capability development and e-learning (Sen 1985). In order to do this, I develop my first supplementary research question reflecting on my first research objective: **how are the development of capabilities and e-learning connected?** In the given rural reality in Bangladesh, where monthly income per household is considerably low, when compared to the high prices of the commodities and the average size of households,[12] ensuring access to the resources required for e-learning, might appear challenging for those living in situations of poverty.[13] Therefore, understanding the rural realities in terms of affording the required resources for e-learning, might offer an insider perspective of

[12] On average the monthly household income in rural areas is only about BDT9648 (equivalent to approximately £74.79) where average household size is about 4.53 (BBS 2010). This amount of money is equivalent only to the total expense for ten standard meals for a person in the capital. The conversion rate between BDT and GBP was: 1GBP = 129BDT, as per the exchange rate of the central bank of Bangladesh on 7th April 2014, when I collected data (Bangladesh Bank 2014).

[13] Among different tangible and intangible resources, different ICT devices, skills required to use ICT, and literacy, are the pivotal ones.

their approaches towards e-learning. In order to understand these realities, I develop my second supplementary research question, reflecting on my second research objective: **how is the adoption of e-learning linked to resources and community support?** Learning as a social process (Greeno, Collins, & Resnick 1996; Haythornthwaite & Andrews 2011) needs to be socially embedded, if it is to make any sense to respective people, and if this social process is to be accommodated in the everyday life of these people (Avgerou 2002). Therefore, it is essential to understand the social embeddedness aspects of e-learning, if it is to be a part of the lived reality in rural Bangladesh. To address this issue in line with my third research objective, I develop my third supplementary research question: **how is e-learning positioned in terms of social embeddedness?**

1.5. Research approach

I adopt a qualitative approach in order to conduct my research. My research approach is grounded in my interpretivist philosophical worldview and the characteristics of my research inquiry, which involves understanding the meanings rural people associate with e-learning with regard to its roles in the achievement of their wellbeing. In accordance with my research approach, I develop a case study research design to address my research questions. Case study research design is more appropriate compared to other research designs, because e-learning is a new phenomenon in my research context, and case study research is argued to be suitable for 'an empirical inquiry about a contemporary phenomenon' (Yin 2009, p18). I pursue comprehensive descriptions, which are sometimes referred to as thick descriptions (Bromley 1986; Geertz 1973; Stake 1995), in order to develop an in-depth understanding of my research inquiry through my cases.[14] I study three cases in order to understand the conceptualisations of e-learning and the relationships between e-learning and wellbeing, in different contexts.

The first case, which I name 'Cycle-Women', is about a project that trains local educated women in basic computer operating and some health check-up techniques.[15] This training aims to transform them into technopreneurs.[16] These women offer paid services to their respective service users, who are usually women, by visiting their

[14] I anonymise the underlying projects of my cases and the implementing institutions, in order to help my respondents, remain disguised and avoid any embarrassment.
[15] Women who have completed at least ten years of education, which is equivalent to Ordinary level as per General Certificate of Education in the UK, are considered in this regard.
[16] Entrepreneurs who deal in computer and Internet.

houses riding bicycles. They offer services on basic health check-up (such as measuring blood pressure, blood sugar and body mass, and pregnancy tests) and around ICT (such as video calling over Internet, Internet browsing, searching information, online job searching, online job applications, and mobile phone based money transfer). They also demonstrate knowledge sharing through digital content on health, agriculture, rights and entitlements. [17] This knowledge sharing service is free of charge, but only to the members of their respective groups. This project operates at two locations in Bangladesh. However, my case covers only the initiative located at Gaibandha district, because it is the longest running one and according to the poverty map of Bangladesh, this district is one of the worst poverty affected regions in the country (BBS, WB & WFP 2009).

The second case, which I name 'Computer-Shop', is about a project that offers local farmers with free access to an online repository of agricultural knowledge through selected local computer shops. [18] The agricultural knowledge repository is accessed through a particular website, which respective computer shop operators can access for the local farmers. During the first year of this project, local facilitators were employed for the computer shops to reach local farmers in order to understand their agricultural problems and then to provide them with solutions. [19] A few of those computer shops did not have any local facilitator appointed by the project since the beginning; in this case the respective computer operators need to do the tasks of a facilitator. The project covers different locations in Bangladesh, but my case includes three computer shops involved in the implementation of this project, two of which are located in Rangpur district and the other one in Gaibandha district. I select the case locations in these two districts, because these are two of the worst poverty affected regions in the country (BBS, WB & WFP 2009).

The third case, which I name 'Internet-Freelancing', is about a young expert computer enthusiast and his voluntary initiatives for Internet freelancers. It is located in the

[17] These are digital files usually in text, audiovisual and video clip formats. By the term format I refer to the observable characteristics of the contents such as visual and auditory characteristics.
[18] Online repository refers to a collection of encoded information in text and image formats, stored on the Internet.
[19] The facilitators were young males and there was no condition on whether they should be educated or not.

district of Kushtia.[20] He promotes e-learning for skills building, mostly in the areas of web programming in order to enable the respective enthusiasts to earn money through Internet freelancing. He develops digital content in the native Bengali language and shares these video and text based content for free on his publicly accessible website. In order to offer an accomplished learning experience, he uses an online social networking site to provide technical knowledge support on web programming, addressing the learners' queries. He does this with the help of altruistic support from expert Internet freelancers, referred to as the expert crowd.[21] In his village, he also offers free residential training in web programming to male ICT skilled web programming enthusiasts from around the country.[22]

To collect data from these three cases, I adopt interviews, focus group discussions and observation methods. I conducted sixty-two interviews and thirteen focus group discussion sessions to collect data (see chapter three for details). I interview the primary beneficiaries (I refer to them as project participants) of the underlying projects of the cases, officials of the underlying projects of the cases, government officials, local opinion leaders at the case locations, and a group of ICT and development experts as the members of knowledge communities. As the interview and focus group sessions were in Bengali, I had to transcribe and translate audio recordings into English, simultaneously. To analyse my data, I use thematic data analysis method, which comprises of five steps: familiarising myself with data, developing codes,[23] identifying themes, reviewing the identified themes, and then writing the analysis part of my research report. I adopt Sen's (1984, 1985, 1987, 1999) capability approach framework as my theoretical framework to interpret my data.[24] This framework is coherent with the definitions of poverty and wellbeing, I follow in my research. Throughout my research, I pursue ethical standards

[20] Those who pursue freelancing work on Internet platforms for online market places. Online market places are the websites which link Internet freelancers with those who pay them for their freelancing services.

[21] Crowd refers to online communities who contribute their collective intelligence to any appealing online initiative (Brabham 2013). Getting collective intelligence in this way is called crowdsourcing.

[22] By ICT skill, I refer to the skills required to operate computers, commonly used software at offices, and the Internet. The commonly used software includes but is not limited to the composing software and presentation (slides) making software.

[23] Developing codes refers to categorising data considering what it means, or, what it is about, or, its implications (Lofland & Lofland 1995).

[24] According to this framework: 'A person's capability to achieve functionings that he or she has reason to value provides a general approach to the evaluation of social arrangements, and this yields a particular way of viewing the assessment of equality and inequality…functionings are constitutive of well-being, capability represents a person's freedom to achieve well-being.' (Sen 1992, p5,49). A detailed discussion on this framework is presented in chapter two.

that are compliant with the guidelines set by the British Sociological Association, UK Data Archive and University of Sheffield.

1.6. Scopes and limitations of my research

As my research belongs to the broader umbrella of ICT4D, it might raise expectations to various extents, regarding the depth of analysis in any particular discipline. This is why I intend to assert the scope of my research. In my research, I only focus on the issues around informal learning with the help of ICT options and the corresponding developmental outcomes in terms of the achievement of wellbeing. As I use case studies, the scope of my research is also influenced by scope of the underlying projects in my cases. However, in order to develop an in-depth understanding, I prioritise reflecting on respondents' views related to e-learning, even if those go beyond the scopes of the underlying projects of the cases. For instance, while the underlying projects of the cases do not involve local high-school teachers in their respective initiatives, I access them for their views because participants of the underlying projects of the cases consider them to be the key local community members who can help them to make sense of e-learning and adopting it in a socially embedded manner. My research focuses only on those areas of learning that are relevant to each of my case studies and which the respective project participants are concerned about in order to achieve wellbeing.

As being an interdisciplinary research, its analysis and discussions could consider deeper engagements of related other areas of knowledge and related theories beyond those of e-learning and wellbeing. However, in order to keep a coherent focus of my research inquiry, while analysing my data I limit engaging the perspectives offered by different areas of knowledge. For instance, although concept of social capital can be related to the development of human capital which can then be linked with development (Coleman 1988), I do not focus on the social capital perspective in analysing my data. This is because e-learning is a new phenomenon in the social reality of the rural Bangladesh. The inhabitants of the rural Bangladesh are only in the process of developing and negotiating social norms and values around e--learning, through the socialisation of technology which requires considerable length of time (Coleman 1988; Gagliardone 2009; Ropohl 1982, 1999). As a result, a social capital perspective would develop a particular understanding which can be expected to differ from the one (a comparatively more consistent understanding) that could be developed at a later time when e-learning would not be considered as a new phenomenon in the respective

context. This is because the respective social system by then would have developed its own norms around e-learning which then could be utilised to facilitate applying the social capital perspective. I therefore use Sen's capability approach framework instead of social capital theories, in order to develop an interpretive account of the phenomenon at current time.

While the scope of my research mentioned above might be conceived as representative of the limitations of my research, but I do feel a responsibility to declare some other limitations of my research, which I could not mitigate for valid reasons. Some of the limitations are inherited from the characteristics of the underlying projects of my cases. For instance, at case locations, I mostly engage with project participants who are representative of the target beneficiaries of the underlying projects. Another limitation of my research is the limited time I spent in collecting data from Bangladesh. The limited timeframe of the PhD programme influenced me to limit the total number of respondents for interviews and focus group sessions. Given that limitations are inherent in any research, I took steps to minimise the resulting effects of the limitations of my research, which I discuss in detail in chapter three.

1.7. My personal background

A researcher's background has substantial influence over how a research inquiry is approached, what methodology is pursued and how that is designed, what data is extracted, and how it is analysed (Malterud 2001). In the case of qualitative research, particularly with regard to ICT, a researcher's identity, knowledge and her/his preconception based expectations have substantial influence over the research findings and respective analysis (Myers & Newman 2007; Wolfinger 2002). Therefore, asserting my background is important, as it might have influence over how my findings are going to be interpreted and perceived. It is also important because sometimes validity of a research is also affected by a researcher's preconceptions and social self due to its influence over respondents' reactivity[25] (Maxwell 2013). Although it is believed that maintaining analytical distance through reflexivity can minimise these influences, which I also maintained, it might not eliminate researcher's actual influences, which are argued to be impossible to eliminate (Johnson 1997; Maxwell 2013).

[25] Reactivity refers to the researcher's influence over respondents and/or the research context.

My knowledge and preconceptions are influenced by my education, work and life experiences. My Bachelor's degree in computer science and engineering and Master's degree in business administration offer me multiple perspectives to analyse a phenomenon through the lenses of technology and business. My work experience with information systems at a multinational company in Bangladesh also offered me the opportunity to understand how technology is conceived by institutions and their service users. These positions can raise concerns that my knowledge and preconceptions might have been technologically deterministic. However, my previous experience in conducting qualitative research in the areas of social sciences, [26] and the social science modules I completed at University of Sheffield[27], have supported me in developing an interdisciplinary perspective, eliminating any possible influence of technological determinism. These trainings developed my competencies in critically analysing a phenomenon using an interdisciplinary lens. My involvement as a co-researcher in an ICT4D project in the UK also helped me with applying and refining my newly developed skills and perspectives, before going to Bangladesh to collect data for my research. [28] My exposure to different disciplines and relevant studies, work experience, and trainings has helped me develop the required competencies to maintain analytical distance throughout my research. As my research context is in Bangladesh, my ethnicity as a Bangladeshi enhances my confidence in conducting this research, because it can help me build rapport with my respondents, which is effective in ensuring convenient access to them and getting their less biased responses. Therefore, my knowledge, work experience, and ethnicity have supported me in conducting this interdisciplinary research effectively and developing my thesis from an interdisciplinary perspective.

1.8. Outline of my thesis

In my thesis there are ten chapters including this introductory chapter. In chapter two, I present discussions on the related literature. This chapter is divided into five main sections. In section 2.2, I present poverty discourses to offer insights on the different ways poverty is conceptualised, and on how it is conceived and measured in Bangladesh. In section 2.3, I discuss wellbeing and related concepts, which include empowerment

[26] I worked on two development projects in Bangladesh sponsored by USAID and IFPRI respectively. See Gammage *et al.* (2006) for the report on the project which was sponsored by USAID.
[27] The modules I completed include Research Ethics and Integrity, Foundations of Social Science Research, Qualitative Methods for Social Science Research and Global Social Policy and Governance.
[28] I worked as a co-researcher on Digital by Default: South Yorkshire Alpha Project (2012-2013) sponsored by the Cabinet Office of the UK.

and development. Discussions about development include the capability approach framework and its relevancy to ICT. In section 2.4, I discuss the relationships between learning and development, and social theories of learning. In section 2.5, I discuss about gender and its relationship with development and ICT. In section 2.6, I discuss e-learning, how it is conceptualised in developing countries including Bangladesh, and different sociotechnological aspects of e-learning. The sociotechnological aspects of e-learning include inequality in access to ICT, e-readiness and social embeddedness.

In chapter three, I discuss my research approach and research framework. This chapter is divided into five main sections. In section 3.2, I discuss my philosophical worldview. In section 3.3, I discuss my research approach where I talk about the reasons why I adopt a qualitative research approach. In section 3.4, I discuss my case study research design, which includes case selection procedure and a brief introduction to the three cases, my approach to sampling and recruitment of my respondents, data collection methods I used, my approach to transcription and data management, and how I did my data analysis. In section 3.5, I present my approach towards ethical considerations throughout this research process, including composing my thesis. Section 3.6 presents my reflections on my methodology.

In chapter four, I describe the context of my research. This chapter is divided into three main sections. In section 4.2, I describe the ICT policy and ICT infrastructure of Bangladesh for the broader context of my research. Section 4.3 presents the case context, specific to the three cases. The case context details the sociocultural characteristics, physical environmental characteristics and uses of ICT. In section 4.4, I present my reflections on the current situation where I also present views of the expert groups, who I interviewed, on the potentials of e-learning with regard to rural people's wellbeing achievement.

In chapter five, I detail the three cases of my research. This chapter is divided into three main sections and in each section I present descriptions of each case, in terms of details of the underlying projects and/or interventions, the respective actors involved in the case, and the respective implementation procedures. In section 5.2, I describe the Cycle-Women case. In section 5.3, I describe the Computer-Shop case. In section 5.4, I describe the Internet-Freelancing case. This chapter works as the backdrop of the next three chapters – chapter six, seven and eight.

In chapter six, I discuss the findings and respective analyses based on the Cycle-Women case. This chapter is divided into nine main sections, each of which discusses a particular theme. The theme in section 6.2 shows that the underlying project of this case follows a predominantly top-down implementation approach. The theme in section 6.3 shows that funding has considerable influence over the implementation of the e-learning initiative. The theme in section 6.4 shows that the project participants as well as the local level implementation partner believe that government has the authority in implementing e-learning initiatives for ordinary rural people. The theme in section 6.5 shows how language plays a critical role in making sense of e-learning content. The theme in section 6.6 shows how trust shapes rural people's adoption of e-learning. The theme in section 6.7 demonstrates how a lack of context specificity in the content, weakens a gender specific approach around e-learning. The theme in section 6.8 shows that rural people find video clip with real-life demonstration as the most effective type of content, when e-learning is concerned. The theme in section 6.9 shows that consistent technical support at local level is vital for adoption of e-learning. The theme in section 6.10 demonstrates that lack of social embeddedness in the e-learning initiative can result in a disguised participation, instead of active participation.

In chapter seven, I discuss the findings and respective analyses, based on the Computer-Shop case. This chapter is divided into nine main sections, each of which discusses a particular theme. The theme in section 7.2 shows that commercial motives behind funding and the implementation can only bring marginal developmental outcomes. The theme in section 7.3 shows that the implementation demonstrates a top-down approach. The theme in section 7.4 shows that the particular approach the implementing institution pursued for knowledge codification is a contested one. The theme in section 7.5 shows that the type of content used for e-learning plays a significant role in the learning experience. The theme in section 7.6 demonstrates the roles of language with regard to the intelligibility of the e-learning content. The theme in section 7.7 shows that trust has substantial influence over the learning experience. The theme in section 7.8 shows that gender specific approach remains dominant in the way the e-learning initiative is implemented. The theme in section 7.9 discusses rural people's preferences around facilitators. The theme in section 7.10 shows that authority lies in government with regard to implementing e-learning initiatives.

In chapter eight, I discuss the findings and respective analyses based on the Internet-Freelancing case. This chapter is divided into seven main sections, each of which discusses a particular theme. The theme in section 8.2 shows that e-learning can work as an alternate to formal education. The theme in section 8.3 shows that as a learning option, e-learning can help overcome a range of barriers. The theme in section 8.4 shows that infrastructural challenges limit the potentials of e-learning. The theme in section 8.5 shows that crowdsourcing can enhance the effectiveness of e-learning initiatives. The theme in section 8.6 shows that language remains a persisting challenge even for the educated Internet freelancers. The theme in section 8.7 demonstrates that economic empowerment cannot always bring wellbeing for the Internet freelancers. The theme in section 8.8 shows that trust relationships is essential to make e-learning initiatives effective.

In chapter nine, I present discussions on the findings and their analyses of all the three cases in a consolidating manner, and discussions on my four research questions. This chapter has five main sections. Section 9.2 is divided into six subsections. In subsection 9.2.1, I discuss how e-learning can help overcome some of the barriers learners face in learning. In subsection 9.2.2, I discuss the relationships between trust and adoption of e-learning. In subsection 9.2.3, I discuss how local community can play the roles of a supporting platform. In subsection 9.2.4, I discuss how the types of the e-learning content influence rural people's understanding. In subsection 9.2.5, I discuss the roles of funding in establishing e-learning as a means of learning and developing awareness, skills and knowledge for the rural people in Bangladesh. In subsection 9.2.6, I discuss how crowdsourcing can enhance effectiveness of an e-learning initiative. In section 9.3, I discuss the first supplementary research question. In section 9.4, I discuss the second supplementary research question. In section 9.5, I discuss the third supplementary research question. In section 9.6, I discuss the central research question.

I conclude this thesis in chapter ten, which is divided into four main sections. In section 10.2, I present a summary of background of my research. In section 10.3, I discuss the main conclusions which include my contributions to knowledge. In section 10.4, I present my recommendations. In section 10.5, I consider the further research questions that came out through my research.

1.9. Conclusion

My research is a timely initiative to conceptualise how e-learning can work as a means of rural people's wellbeing achievements. This is because it can minimise the persisting digital divide, which is a current concern of the GoB, who are motivated to promote ICT in order to support the socioeconomic development of the country. My four research questions address the related issues around development of capabilities, adoption of e-learning in the resources constraint rural reality, roles of the community and social embeddedness aspects of e-learning. A thorough literature review around these issues (which I present in the next chapter) informs me of the existing related knowledge. This enables me to approach to my qualitative case study research with interdisciplinary perspectives.

Chapter 2
Literature Review

2.1. Introduction

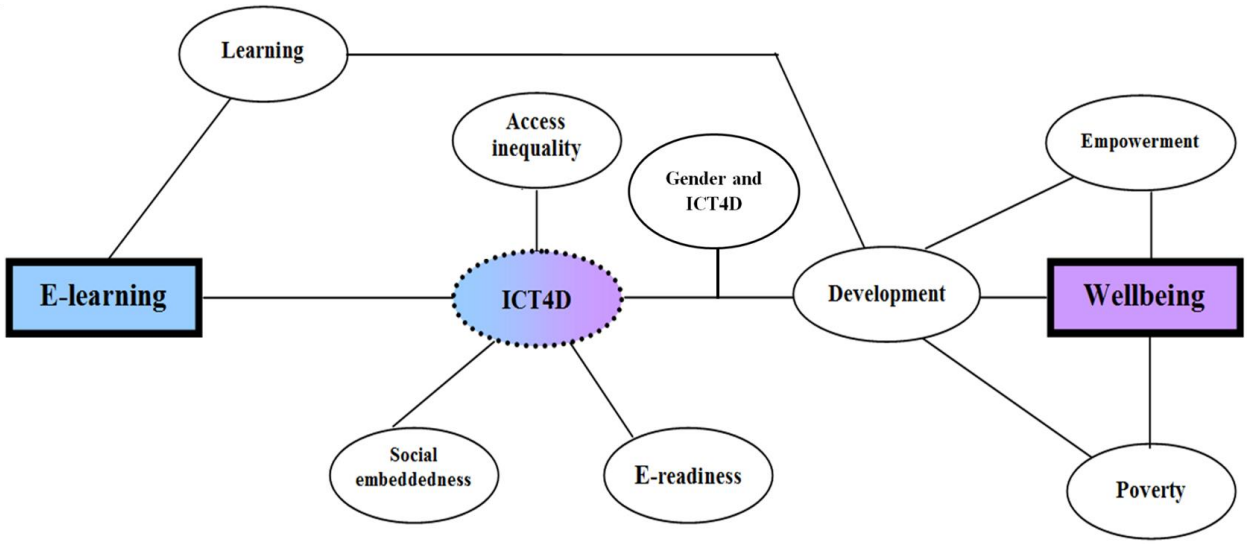
This narrative literature review aims to provide a comprehensive background to understand the existing knowledge around achievement of wellbeing through e-learning for those living in situations of poverty in Bangladesh (Cronin, Ryan & Coughlan 2008). This literature review is underpinned by my initial research questions (Beecroft, Rees & Booth 2006). While the initial research questions provide a structure to literature review, my narrative approach also allows for opportunities to further refine the research questions based on the acquired knowledge through the review (Cronin, Ryan & Coughlan 2008). With regard to selecting the areas of related knowledge, my literature review focuses both on the main themes of my research, which are wellbeing and e-learning, and on its context, which concerns those living in situations of poverty in rural Bangladesh. Wellbeing being a broader concept with contested definitional approaches and relevancies (Dodge *et al.* 2012); I adopt Sen's (1993) conceptualisation of wellbeing which is broad and flexible to fit into my context. With the themes of e-learning and wellbeing at the forefront, in the following sections I present the approach of my literature review and its framework.

2.1.1. Approach of Literature Review

I adopt a narrative approach to my literature review in order to summarise and critique the existing knowledge that addresses my research questions (Cronin *et al.* 2008). This literature review will provide the background knowledge to my research and also identify gaps or inconsistencies in the existing body of literature. As my research is concerned about the wellbeing of those living in situations of poverty in rural Bangladesh, my review includes literature in the areas of poverty, development and empowerment, which are intimately connected to Sen's (1993) conceptualisation of wellbeing. Roles of knowledge in development (Chambers 1983; Coombs & Ahmed 1974; OECD 2001; UN 2015) link e-learning with wellbeing, by the ways e-learning can facilitate knowledge development through offering learning opportunities, which can bring developmental outcomes. My literature review includes existing knowledge around the relationships between learning and development. As my research is concerned about learning through electronic means, particularly ICT, knowledge around ICT4D is also relevant for my research inquiry as the knowledge interconnects e-

learning and wellbeing. I pictorially present my approach towards literature review in the Figure 2.1 below.

Figure 2.1: Orientation of my literature review



Furthermore, my literature review includes knowledge in the areas of gender with regard to its relationship with ICT4D. It also includes knowledge in the related areas of ICT4D which correlates e-learning with access inequality, e-readiness and social embeddedness. Although ICT4D is present in the above diagram (Figure 2.1) as a connecting area of knowledge linking wellbeing with e-learning, I do not explore literature that discusses ICT4D as a whole. Rather, I focus the above three related areas in order to keep the flow of my literature review specifically around e-learning. Literatures in these related three areas address the sociotechnological aspects of e-learning.

I used Google Scholar and web of science to locate related literatures and searched these resources with focus on the relationships between e-learning and wellbeing particularly in the developing countries especially in Bangladesh. As e-learning and wellbeing are connected through ICT4D, therefore I also searched ICT4D literatures which focus on gender and sociotechnological aspects of e-learning particularly on inequality of access to ICT, e-readiness and social embeddedness aspects of e-learning.

2.1.2. Framework of Literature Review

As my research considers e-learning and the wellbeing of those living in situations of poverty, first I discuss poverty in section 2.2. I present the poverty discourses around different definitions of poverty and their implications, how poverty is conceived by those living in situations of poverty in Bangladesh, and different poverty measurement approaches in Bangladesh. Then, in section 2.3, I discuss wellbeing with a particular focus on developing countries, as Bangladesh has been considered a developing country.[29] This section comprises of two subsections. In subsection 2.3.1, I discuss empowerment. In subsection 2.3.2, I discuss about different concepts around development and also present a discussion on capability approach framework which is my theoretical framework for data analysis. In section 2.4, I discuss how learning and development are interconnected. This section has one subsection in which I discuss about the social theories of learning. In section 2.5, I discuss about gender with regard to its relationships with ICT4D. In section 2.6, I discuss about e-learning and its relationship with development and wellbeing, in terms of the three related sociotechnological aspects of e-learning. These aspects can be considered as different dimensions of ICT4D that affect e-learning in the realities of a developing country. The socio-technological aspects of e-learning I discuss include: access inequality, e-readiness and social embeddedness. I conclude this chapter in section 2.7, by identifying the gaps in the related literature I reviewed.

2.2. Poverty Discourses

As my research inquiry concerns wellbeing of those living in situations of poverty in rural Bangladesh, it is imperative to discuss the ways in which poverty can be understood. Aspects of poverty, and the measures to address it, depend mainly on how poverty is conceptualised and who conceptualises it. There exist different approaches to define poverty and to measure it, and each approach has criticisms. For instance, Atkinson (1987) claims that, the main criticism of poverty measurement lies in the methodology used. However, it can be argued that as any measurement of poverty depends on how poverty is defined, criticism of poverty measurement can be linked back to the respective definition of poverty.

[29] Bangladesh was considered as a developing country when I conducted my field work in 2014. However, in the World Development Indicators 2016 of the World Bank, Bangladesh is no longer categorised as a developing country. World Bank has changed its approach to categorise countries in terms of developed and developing countries (World Bank 2016).

2.2.1. Definitions and Implications

The definition of poverty, how it is measured, and identifying who is classified as poor, have all been fiercely contested. The main focus of these debates is whether poverty is largely about material needs or a broader set of needs that allow for wellbeing or reduction in ill-being (Wood & Sharif 1997). Chambers (1995, 1997) emphasises that poverty is more than being income-poor and defines it as a lack of physical necessities, assets and income. He relates poverty to different forms of deprivations, such as vulnerability to an abrupt decrease in consumption level, ill-health, social inferiority, powerlessness, isolation, and humiliation that poor people experience. In addition to all these factors, landlessness[30] is also considered as one of the key indicators of poverty in developing countries (Barkat 2004; Carter 2003; Sachs 2005; World Bank 2003). The international community of the United Nations (UN 1995) includes some other aspects and develops a multidimensional perspective of poverty:

> "Poverty has various manifestations, including lack of income and productive resources sufficient to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments; and social discrimination and exclusion. It is also characterized by a lack of participation in decision-making and in civil, social and cultural life. … Women bear a disproportionate burden of poverty, and children growing up in poverty are often permanently disadvantaged. … Furthermore, poverty in its various forms represents a barrier to communication and access to services, as well as a major health risk, and people living in poverty are particularly vulnerable to the consequences of disasters and conflicts." (p41)

This perspective of poverty includes a range of issues beyond income poverty and reflects on the aspects that have implications for global poverty situations as well as the local ones, particular to certain areas. This inclusive and detailed account on poverty transcends the material aspects of it and incorporates issues around health, education, environment, and discriminations. It also adopts a gender lens and identifies that women are worse sufferers of the consequences of poverty. While this perspective includes various aspects of poverty including those of wellbeing, it does not offer any generic definition to include broader aspects, as offered by Sen (1985). He defines it as a

[30] Landlessness implies lack of ownership of land as well as insecure tenancy and inequitable property rights encountered by rural people (Spicker, Leguizamón & Gordon 2006).

person's lack of capability to function in a given society.[31] His definition offers a broader understanding that can address not only the issues the international community advocates to incorporate, but also other issues beyond those. This is because by the term 'functioning', Sen (1999) refers to any kind of 'being' or 'doing' a person wishes to pursue and considers valuable. This approach to defining poverty also correlates with the notions of wellbeing as particular states of being, such as having a healthy life, can give an indication of wellbeing achievement.

Poverty is also viewed as a structural injustice or a process that excludes a significant portion of a population from chances to participate, on equitable terms, in opportunities for development and decision making in a society (Sobhan 2010). Here, Sobhan defines structural injustice as the inequitable distribution of opportunities across the society, between the rich and the excluded who are in situations of poverty. He claims that social structure is the root cause of poverty. He also criticises the poverty line concept of evaluating poverty situations.[32] The poverty line concept is intended to be used to measure poverty situations for analysis purposes at national and international levels (Townsend 1993). With this in mind, the underlying definition of poverty implied within this concept might be argued to illustrate a tendency to strive for a technical definition of poverty, in order to make it easier to measure (Beck 1994).

The above discussions show that approaches towards defining poverty have two different motivations - one is to include various types of deprivation and ill-being, while the other is striving for a technical definition to facilitate its measurement and comparison (Beck 1994). Although Sen's (1985) definition of poverty can be thought of carrying the former sense, it can explain broader aspects of poverty. Nonetheless, offering a unified framework for measuring poverty for comparison purposes remains a challenge: even though Sen is both inclusive and broad in his definition, but his definition conceives poverty in terms of values that are usually context specific.

Some of the different approaches to defining poverty have changed and developed over time. For example, definitions of poverty based solely on income have seen a

[31] 'Capability represents a person's freedom to achieve well-being' (Sen 1992, p49). A detailed discussion on capability and its relevancy to development and wellbeing is presented later in this chapter.
[32] Poverty line is a poverty measurement approach where a minimum amount of income ($1 per day, or $1.25 per day) or a minimum amount of money required to pay the cost of basic needs is considered as a line to segregate the total population based on their income oriented poverty situations (Ravallion *et al.* 2009).

considerable change over the last decade. Although the World Bank used to be criticised for promoting the concept of income-poverty[33], it has moved from that income and consumption based approach towards conceptualising poverty (Chambers 1983, 1995).[34] This indicates the inadequacy of that earlier approach, and, at the same time shows that poverty needs to be conceptualised in a broader sense to include notions of wellbeing beyond the income and consumption related factors. Jodha (1988) also illustrates the inadequacy of income based poverty measures in addressing the broader instances of poverty, related to wellbeing. Jodha (1988) concluded that households of Rajasthan in India, who became income-poorer over the periods 1963 to 1966, and 1982 to 1984, regarded themselves as being better-off, based on their self-defined criteria of a quality life. This paradox adds a different dimension to how best to conceptualise poverty and wellbeing, and raises concerns about the inclusion of situated perspectives. It is of note that Sen's (1985) definition of poverty addresses the inclusion of situated perspectives around poverty, as his definition incorporates individual values, which varies depending upon the society or the context the individual lives in. It also includes notions of wellbeing, in terms of what a person values to achieve.

Therefore, to reflect on the interwoven diverse realities around poverty, particularly in the developing countries, the definition of poverty needs to address notions of wellbeing as well. In spite of the existence of variations in the way poverty is conceptualised, a broader approach, such as Sen's, is becoming widely accepted. This approach not only addresses different material needs, but also incorporates diverse factors beyond those, that influence wellbeing in different contexts.

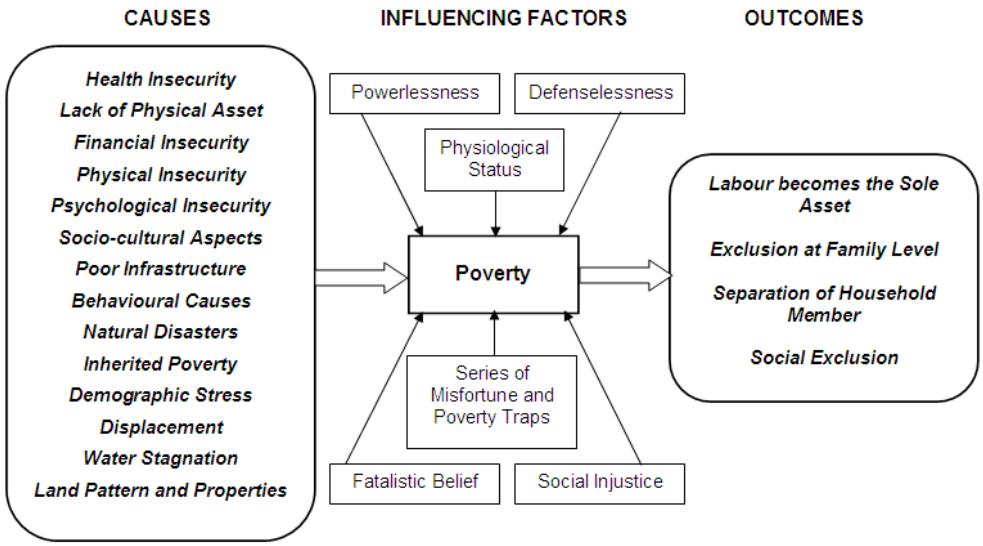
2.2.1.1. Meanings of poverty to those in poverty in Bangladesh

Multidimensional approaches to poverty developed an avenue to conceive poverty from different points of views, resulting in different terms to define poverty of different types, as well as different ways of measuring it. My literature review identified only one study conducted by Borhan (2003) that focuses on how those in situations of poverty in Bangladesh, conceptualise poverty. In Bangladesh, people at different localities perceive poverty in a variety of ways.[35] These understandings, which may only vary

[33] Income-poverty implies low per capita income.
[34] It now perceives poverty as deprivation in well-being and relates it to capability of an individual to function in a society (World Bank 2005). World Bank has shifted towards a definition of poverty, which Sen (1985) has proposed about two decades before the shift.
[35] A list of different ideas around poverty shared by those living in situations of poverty in rural Bangladesh is presented in Appendix I.

slightly, can be attributed to the influence of local culture and tradition, and/or existing structural inequalities (Borhan 2003). Borhan found that rural people conceive poverty in terms of: ownership of land, homestead, household assets (such as furniture) and electronic devices (such as radio and television); literacy; access to sanitary toilet and clean drinking water; occupation; number of meals per day; and physical fitness. Among these, ownership of land is considered by some of the development experts and development partners as one of the factors that correlate with poverty (Barkat 2004; World Bank 2008). However, the level of importance given to each of these criteria varies, even in neighbouring villages. The following diagram (Figure 2.2) presents Borhan's interpretation of the perceptions of the causes and outcomes of poverty shared by those living in situations of poverty in rural Bangladesh. It also shows the factors that influence poverty in different ways.

Figure 2.2: Poverty causes and outcomes – views of those in poverty



Source: Developed based on the findings by Borhan (2003)

The understandings of poverty portrayed above are based on the rural realities dated more than a decade ago and my literature review shows insufficient evidence of any recent work on this matter. It can be argued that the variations in conceptualising poverty, even at different localities within the same country, demonstrates the risk in using one global definition if that fails to address diverse contextual realities around poverty. Sen's (1985) conceptualisation of poverty is useful in this regard, as he conceives poverty as a person's lack of freedom to achieve what a person values, such as learning new agricultural techniques. Therefore, it can be argued that Sen's

conceptualisation of poverty is broad enough to understand the various ideas around poverty embedded in the rural realities in Bangladesh.

2.2.2. Measurement of Poverty

There exist different approaches to the measurement of poverty; most of these correspond to the operational aspects of measuring poverty. However, the complexity of developing an effective approach to measure poverty is also acknowledged by scholars (Tomlinson, Walker & Williams 2008). In one approach, which emphasises the subjective measures, respective population determines a poverty income threshold[36] that is used to measure poverty.[37] National level poverty reduction initiatives follow this principle and countries usually prioritise this approach over an international poverty income threshold (UN 1995). Addressing the inefficacy of the income oriented poverty measurement approach; UNDP developed a Human Poverty Index (HPI) in 1997, to incorporate people-centred indicators in the form of measuring depth of deprivation.[38] HPI is grounded in Sen's conceptualisation of poverty (Spicker *et al*. 2006).

Although the World Bank has shifted from its income based approach to conceptualise poverty, and has been emphasising factors other than income, it continues to measure poverty based on income or consumption per capita.[39] Since 2008, it has been using $1.25/day[40], at 2005 purchasing-power parity[41] (PPP) standard, to measure poverty for international comparison purposes. However, it has been using a relative poverty line in developing poverty reduction programmes or while formulating related policies (Ravallion, Chen & Sangraula 2009). Although these measures offer operational ease, Sen (2011) criticises these approaches because these do not allow for the many variations that influence whether and/or how income is converted into good living.

[36] It refers to a minimum income.
[37] A similar approach is advocated by Walker (1987) which he names a consensual method: it incorporates public opinion regarding minimum income, list of necessary items and approach to funding some of their benefits while defining a poverty line.
[38] HPI measures poverty situation considering the achievements of the most deprived ones in the country (Spicker *et al*. 2006). It incorporates five factors: rate of people expected to die before they are 40 years old, rate of adult illiteracy, access to health services, access to safe water, rate of under five years old child malnutrition (UNDP 1997).
[39] It first defines an indicator of welfare then establishes a minimum acceptable standard of that indicator, called poverty line, to separate the population living in situations of poverty from the other non-poor; and then does analysis based on that poverty line (World Bank 2005).
[40] $1 a day poverty line was introduced for measuring international poverty in World Development Report 1990. However, significant economic changes are presumed while personal consumption goes above $2 a day at 2005 purchasing-power parity (Ravallion, Chen, Sangraula, 2009).
[41] Purchasing-power parity implies that when measured by the same unit, different currencies of the world, after adjusting the amount, should have the same purchasing power to buy the same basket of goods (Cassel 1918).

In spite of the limitations of the above approaches, similar approaches are used by GOB and development partners working in Bangladesh. Daily Calorie Intake[42] (DCI) and/or Cost of Basic Needs[43] (CBN) methods are usually used by institutions to measure poverty in Bangladesh. The ownership of land is also used as a factor to measure poverty but usually for those initiatives that are related to ownership of land, such as the allocation of government lands for ordinary people to get them out of poverty situations (Barkat 2004). According to the DCI method, the threshold for poverty is 2122 kilocalories[44] per day (BBS 2010); according to the CBN method, the national poverty line is about BDT843 [45] (about £6.53) [46] per month (UNICEF 2009). According to the DCI method, a person is categorised as absolute poor if his/her daily calorie intake is lower than 2122 kilocalorie. The respective person would be categorised as hard-core poor, if the calorie intake is lower than 1805 kilocalorie, and as ultra-poor, if the calorie intake is lower than 1600 kilocalorie (BBS 2010). According to the CBN method, two poverty lines are used to evaluate one's poverty situation; these are based on the minimum levels of household expenditure on food and non-food items in order to meet the basic needs of the household.[47] These two lines are called lower-poverty line and upper-poverty line, where the difference is only in the average minimum amount spent on non-food items.[48] Generally, the upper-poverty line is used by the poverty reduction initiatives to identify those who are in situations of poverty. Although poverty measurement approaches in Bangladesh include both food and non-food items, to what extent they reflect on today's reality is difficult to comment on, given that contexts and respective realities are in constant change. A bottom-up approach to conceptualise poverty can offer a more in-depth perspective in this regard.

[42] It is the number of calories typically required in a day for an adult to remain physically fit (World Bank 2005). However, this amount varies by age and other exceptional health conditions.
[43] Cost of a bundle of food and non-food goods at local prices, typically consumed by a person living in situations of poverty (World Bank 2005).
[44] Unit used to measure energy when human body is concerned.
[45] BDT refers to the currency used in Bangladesh, implying Bangladeshi Taka. This amount can be compared to the cost of a standard meal for one in the capital city.
[46] The approximate conversion rate between BDT and GBP was: 1GBP = 129BDT, as per the exchange rate of the central bank of Bangladesh on 7th of April 2014 (Bangladesh Bank 2014).
[47] In case of the food items, eleven food items are considered following the suggestions provided by Ravallion *et al*. (1996) and these include rice, wheat, pulses, milk, oil, meat, fish, potato, other vegetables, sugar and fruits. However, the non-food item does not specify any list of items and incorporates some average expenditure on non-food items as the measuring amount based on the prices in the year 2005 (BBS 2010).
[48] Food poverty line is used in both lower and upper poverty lines. Food poverty line is the estimated total cost of eleven food items required to meet the 2122 kcal requirement for an adult. It can be derived by multiplying the food price by the respective amount. In case of lower-poverty line, food poverty line is added with the median amount spent for non-food items by the households whose per capita total expenditure is close to food poverty line. In case of upper-poverty line, food poverty line is added with the median amount spent for non-food items by the households whose per capita food expenditure instead of total expenditure is close to food poverty line.

Therefore, although there exist different subjective approaches towards conceptualising poverty, these are criticised for their low effectiveness, which can be attributed to their overemphasis on household income (Chambers 1995, 1997; Sen 2011). It can be argued that in Bangladesh, the concept of poverty has been determined by a need to measure it more easily, and this has resulted in emphasising the incorporation of income over the broader implications of poverty, which are intimately interwoven with notions of wellbeing.

2.3. Wellbeing

There is no universally accepted definition of wellbeing (Dodge *et al*. 2012) and it is a difficult task to define wellbeing in precise terms (White, 2008). Initial concepts around wellbeing followed two traditions: hedonic[49] and eudiamonic[50]. However, now most of researchers consider wellbeing as a multidimensional construct (Diener 2009; Stiglitz, Sen, & Fitoussi 2009). Wellbeing can be considered as a measure, complementing traditional concepts of poverty and deprivation (Sumner, Haddad & Gómez-Climent 2009). Reflecting on Aristotle's idea of eudiamonia, Sen (1999) conceptualises wellbeing as a state that illustrates human capabilities or substantive freedom that people value to pursue. Sen (1993) defines wellbeing in terms of 'functionings' or states of a person, such as being adequately nourished and in good health, confronting premature mortality, ensuring self-respect and participating in community activities (Clark 2006). Thus, the way Sen (1999) conceives wellbeing engages the person, primary goods and social arrangements. Sen's conceptualisation of wellbeing spans over both social and philosophical aspects of wellbeing. It can also be argued that although wellbeing emphasises a state of mind, it is also influenced by the material world and the consumption of goods and services. Therefore, economic conditions and economic empowerment also have links to wellbeing achievements. Sen's conceptualisation of wellbeing can explain these links because a person's desired state of economic solvency might include income generation as the 'functioning'. However, utilities from goods, services, and income are argued to be only indirectly linked to the outcomes of wellbeing. This is because although goods and services can facilitate increased wellbeing, what matters the most are the personal characteristics (such as healthy and able body, knowledgeable mind) and social arrangements, which are

[49] It emphasises on happiness, attaining pleasure and avoiding pains (Bradburn 1969, Waterman 1993).
[50] It emphasises on functioning and human development (Waterman 1993).

required to convert those into the person's ability in achieving wellbeing (Sen 1985, 1999).

Based on her research in the context of developing countries (including Bangladesh, Ethiopia, Peru and Thailand), White (2008) develops a framework for analysing wellbeing. She conceptualises wellbeing from multiple perspectives and develops the framework consisting of material, relational and subjective aspects, where standards of living, personal and social relations and values, perceptions and experience are equally weighed. While her conceptualisation covers multiple perspectives, the equal weighted approach can be debated as this aspect may not be representative of all the lived realities in developing countries. However, she recognises the contextual aspects of wellbeing and the roles, place and time can play in influencing perceptions of wellbeing and shaping capacities to achieve it. Hodgett and Clark (2011) also argue that wellbeing is inherently multidimensional and it is a dynamic process that changes over time as values, opportunities, and priorities change. Further to this are the differences between people, societies, and cultures. Sen's (1993) approach to conceptualise wellbeing also incorporates multidimensionality and flexibility to remain valid in different timeframes and contexts. This is because he defines it around what a person values pursuing in her/his lived realities, which changes over time and context, and can accommodate multiple dimensions, such as physical and/or psychological. Therefore, this remains a flexible way to incorporate different realities facing wellbeing.

In spite of the multidimensional aspects of wellbeing concepts, Copestake and Camfield (2009) prioritise only health, food, and water, while measuring wellbeing in the closely-knit societies of Bangladesh. They ignore the community element, which Prilleltensky (2013) claims as a pivotal factor in achieving wellbeing. Thus, theoretical perspectives of how the wellbeing of ordinary people in Bangladesh is conceptualised risks lacking other significant dimensions of wellbeing related to community. In developing countries, one of the least researched dimensions of wellbeing is ordinary people's understanding of their performance with respect to the aspirations and values embedded in respective communities (Camfield 2006). In contrast, research on wellbeing in the contexts of developed countries emphasises this dimension and claims that neighbourhood and community have been pivotal to increased wellbeing of the inhabitants (Hothi *et al*. 2007). Therefore, it can be argued that community can play an important role in supporting its members' wellbeing achievements in the collectivist social reality in rural

Bangladesh (Deci & Ryan 2008; Devine, Camfield & Gough 2008). Sen (1992) categorically endorses this by emphasising the roles of society and social arrangements in achieving wellbeing.

Concepts of wellbeing have facilitated human-centred approaches in development (IDS 2009). The contextualisation of this concept has the potential to address socioculturally embedded notions of wellbeing. Drawing on the human development aspects of wellbeing, some scholars correlate wellbeing achievements with learning opportunities, but, as with notions of community, they limit their study on developed countries, and either around informal learning for adults over fifty years of age (Jenkins, A. 2011; Merriam & Kee 2014), or, around formal learning through education for children or youth (Gutman & Feinstein 2008; Gutman *et al*. 2010; Park 2004; Statham & Chase 2010). However, Cohen (2006) criticises the roles played by formal education in this regard, and argues for changes so that formal education can address wellbeing effectively. Although relationships between wellbeing and learning, in the context of developed countries, are claimed by scholars, my literature review could not find similar claims based on related research on developing countries (Gutman & Feinstein 2008; Gutman *et al*. 2010; Jenkins, A. 2011; Merriam & Kee 2014; Park 2004; Statham & Chase 2010). White (2008) argues that this trend of contextualisation demands researchers to be more active to incorporate wellbeing issues of developing countries, so that the conceptual framework does not get westernised. She also recognises that one of the major flaws of a wellbeing approach is the politics of how it is defined and used in development discourses. Although varying perceptions exist regarding the indicators or determinants of wellbeing, Sen (2003) argues that even Adam Smith and Karl Marx specifically mentioned the importance of 'functionings' and capability to function, as the determinants of wellbeing. This brings in issues around empowerment to understand how people's ability plays role in achieving their wellbeing.

2.3.1. Empowerment

The term empowerment is used in different contexts in different ways. In order to develop an understanding of the relevant knowledge around my research inquiry, I intend to discuss empowerment from the perspectives of developing countries. Reflecting on the realities in developing countries, Mayoux (2001) claims that empowerment is a precondition for poverty reduction and can be considered as a means of development. While grasping a bottom-up perspective of empowerment in the rural

Bangladesh, Jupp, Ali and Barahona (2010) find that understanding of empowerment is influenced by people's experience and normative beliefs, and therefore is not something very specific. They identify that empowerment is conceived as a process, which is assessed by the expected outcomes of it. These expected outcomes can be compared to the desired states of being or doing and thereby wellbeing, as per Sen's (1993, 1999) conceptualisation of wellbeing. Jupp *et al.* (2010) present the following diverse aspects of empowerment, which they identified in the lived realities of those living in situations of poverty in Bangladesh.

> "Empowerment is a contested concept and a moving target. It comprises complex, interrelated elements embracing values, knowledge, behaviour and relationships. The empowerment process is non-linear and depends largely on experience gained from opportunities to exercise rights that are inherently context specific. So, for example, people may become socially empowered but have limited political empowerment in one context, but may become relatively politically empowered with limited social empowerment in another." (Jupp *et al.* 2010, p16)

The interrelationships between different types of empowerment found by Jupp *et al.* (2010) reflect what Sen (1999) also claims about the interrelationships between the five instrumental freedoms, which constitute experiences of development.[51] These five instrumental freedoms are: political freedom, such as freedom of speech; economic facilities, such as opportunities to use economic resources; social opportunities, such as access to education and health services; transparency guarantees, such as assurance of justice; and protective security, such as social protection to avoid vulnerability (Sen 1999; Alkire 2010). An implication of the contextual aspect of empowerment can also be traced in the argument made by Rowlands (1995) where he emphasises that empowerment is a bottom-up process, and stresses that it cannot be bestowed from top-down.

United Nations Development Programme (UNDP) emphasises people's participation, while defining empowerment. According to its Human Development Report 1995, empowerment is all about participation where people can make decisions and inform the processes that shape their lives (UNDP 1995). While participation can indicate empowerment, but by only looking at participation, it might not be possible to understand whether this participation was there before, and thereby to identify whether

[51] Discussion of development is presented in the next section.

or not this participation is a new change for the respective person. Sen (1999) emphasises on this change factor and argues that it helps to evaluate the achievements in effective way. Oxaal and Baden (1997) argue that development initiatives in Bangladesh try to address empowerment through the interventions of credit programmes[52], promoting political participation, and establishing justice, rights and health support. These can be correlated with four of Sen's five instrumental freedoms: economic facilities, political freedom, transparency guarantee and social opportunities respectively. However, contributions from these initiatives to foster empowerment can be evaluated only in terms of the changes they make to an individual's situation. Kabeer's (1994, 1998) conceptualisation of empowerment, which is based on the context of Bangladesh, can be argued to offer a broader perspective of empowerment. Kabeer argues that empowerment is a multidimensional process of change and it enables an individual to make life choices that were denied earlier in the same context. This conceptualisation of empowerment also incorporates the way Sen (1999) emphasises the change factor to evaluate achievements through empowerment.

Empowerment is grounded in the idea of power.[53] Foucault (1982) conceives power in terms of relationships and argues that power exists at every level of society. Bourdieu (1989) emphasises the symbolic aspects of power, which are embedded in interactions and practices. In their research on the different aspects of empowerment in the context of Bangladesh, Oxaal and Baden (1997) identify several ways power operates: 'power over' implies notions of domination or subordination; 'power to' implies having authority to make a decision to address problems; 'power with' implies organising people to achieve collective goals; and 'power within' implies self-esteem, self-awareness and self-confidence (Lukes 2005; Nelson & Wright 1995; Oxaal & Baden 1997). Oxaal and Baden (1997) argue that an increase of power in one group of people eventually creates a synergy with other groups, leading to an overall empowerment of the respective community, rather than creating an increased power gap. Williams, Seed and Mwau (1994) propose another way of conceptualising 'power within', which is

[52] The credit programme based initiatives in Bangladesh are also criticised by scholars with regard to the gaps between their stated objectives and the ground level realities (Khondkar & Hulme 2000).

[53] Power is conceived in a range of ways. Some scholars define power in terms of influence where influence is grounded in different types of changes (French & Raven 1959; Raven & French, 1958). In view of Weber (1925): "within a social relationship, power means every chance, (no matter whereon this chance is based) to carry through the own will (also against resistance)" (Wallimann, Tatsis & Zito 1977, p232). While Foucault offers relational aspects of power in terms of social struggles (Cronin 1996), Bourdieu (1989) emphasises on the symbolic aspects of power which are embedded in interactions and practices. Among existing different views of power, I am drawing on Oxaal and Baden (1997) because they look at power issues in rural Bangladesh.

about recognising how power operates in life and about gaining confidence to instigate change at an individual level. Among these concepts, 'power within' encompasses notions of self-help that can be considered as pivotal to achieve empowerment. Research findings also claim positive relationships between empowerment and notions of self-help at both individual and community levels (Goodson, Coaffee & Rowlands 2011; Kabeer 2012). Some scholars also emphasise that this 'power within' concept has the potential to enable an individual to achieve empowerment, and they argue that it is particularly effective for women in developing countries (Nikkhah, Redzuan & Abu-Samah 2012).

Among the different approaches to conceptualise empowerment, which I discuss above, Kabeer's view of empowerment is important for my research. This is a broader approach, which also incorporates all the different types of instrumental freedom, Sen (1985) advocates as essential to achieve development through empowerment. Kabeer's definition can be argued to incorporate political empowerment, economic empowerment, social empowerment as well as legal empowerment. It is based on the realities facing those living in situations of poverty in Bangladesh, which makes it more relevant to my research as implications of empowerment also depend on the context.

2.3.2. Development

Poverty, wellbeing and empowerment, in the lived realities of those living in situations of poverty, correlate with the concept of development. The meaning of development varies with respect to time, place and the person or institution who or which attempts to define it (Chambers 2004). Frank (1966) criticises historians who study only developed countries, which results in insufficient theories around development. He argues that the economic and social history of the ignored population of the world should be considered in order to understand what gave rise to their present underdevelopment. In a similar manner, Avgerou (2010) also claims that development policies and respective actions are influenced by power relations and conflicting interests, persisting among international and national politics, alongside the policies of international development agencies. Avgerou argues that these have become contested especially in developing countries. Therefore, developing a universally accepted concept of development can be considered as a contested endeavour (Avgerou 2010).

Modernisation was the earliest approach towards development where it was primarily about modernising the developing countries by transferring scientific and industrial advancements of the West (Madon 2000). In the 1960s, ICT was included in the manifesto of development, prioritising the roles of information and knowledge in advancing an economy to achieve "an advanced stage of development called an 'information economy'" (Madon 2000, p88). Madon identifies that during that time, a neo-populist school of thought started advocating an alternative perspective of development for the developing countries, without following the approaches of the West. In the 1980s, ideas about sustainable development emerged, which subscribes to the understanding that development depends on local ecology and culture; and this is in contrast to the notion of economic growth, which is pursued as the index of development in the West (Madon 2000). The concept of development gradually shifted from economic focus to social focus, covering social welfare, social wellbeing, social equity, empowerment, democracy and sustainable development (Madon 2000; UNDP 1991). With the advancement of technology and the changed perspectives of development, links between the use of technology and development has also started to become stronger (Madon 2000).

UNDP makes a structured approach[54] to development, which can be found in its Human Development Report where it frames development as "an enabling environment for people to enjoy long, healthy and creative lives" (UNDP 1990, p9). Some scholars emphasise the role of economy and consider development to be about utilising productive resources to improve living conditions of those living in situations of poverty (Peet & Hartwick 1999). However, Sen (1999) emphasises that notions of inequalities, which are indicators of changes in development, should be considered beyond the domains of economy to address development effectively. Sen conceptualises development from a broader perspective, arguing that development is "a process of expanding the real freedoms that people enjoy" (Sen 1999, p3). In a later work, Sen defines development as "enhancement of human living and the freedom to live the kind of life that we have reason to value" (Sen 2006, p35). He considers freedom as central to the process of development, in terms of the evaluative[55] and effectiveness[56] purposes (Sen, 1999). He argues that freedom is not only the end result of development, but it is

[54] UNDP uses a Human Development Index to measure development and the index comprises average achievements in three key areas: having a long and healthy life, becoming knowledgeable and having a decent standard of living.
[55] Assessing progress in terms of enhancement of freedom that people experience.
[56] Measuring effectiveness of development based on the free agency people experience.

also one of the principal means of achieving development. The five types of instrumental freedoms he relates to development can also be found interwoven to some degree with different notions of wellbeing. For example, social opportunities to maintain good health can be considered as a means of achieving wellbeing. Sen (1999) also argues that human development can be achieved through fostering agency, which incorporates the significances of empowerment. It can be argued that development is then about empowering people to let them enjoy their positive freedoms to live a life they have reasons to value, and which can offer them some senses of wellbeing. [57]

In spite of the various ways of defining development, there exists a commonality: development is about making a better world for those living in situations of poverty (Chambers 2004). Among the existing concepts of development, Sen's approach to conceptualise development on the basis of human freedom contrasts with other views, which are comparatively narrower "such as identifying development with the growth of gross national product, or with the rise in personal incomes, or with industrialisation, or with technological advance, or with social modernisation" (Sen 1999, p3). His concept also brings in a bottom-up perspective of development, where the means of achieving development is conceived as empowering people to enjoy the freedom to pursue a course of action they value, and therefore contributes to their wellbeing. This demonstrates that empowerment and wellbeing are interrelated key components of development, which altogether constitute the basis of Sen's (1985, 1989) theoretical framework, referred to as the capability approach.

2.3.2.1. Capability Approach

The capability approach has become an influential alternative framework to the standard economic framework, to address development, justice, equality and wellbeing (Clark 2009). It emphasises human capabilities over income, resources, primary goods, and utilities (Oosterlaken 2012). Sen (1984, 1985, 1987, 1999) develops this framework through several modifications, but the basis has always been the issues around freedom and human capabilities. According to his framework:

> "A person's capability to achieve functionings that he or she has reason to value provides a general approach to the evaluation of social arrangements, and this yields a particular way of viewing the assessment of equality and

[57] Positive freedom is the exercise of freedom for positive purposes such as to avail health facilities to remain healthy.

> inequality…functionings are constitutive of well-being, capability represents a person's freedom to achieve well-being." (Sen 1992, p5,49).

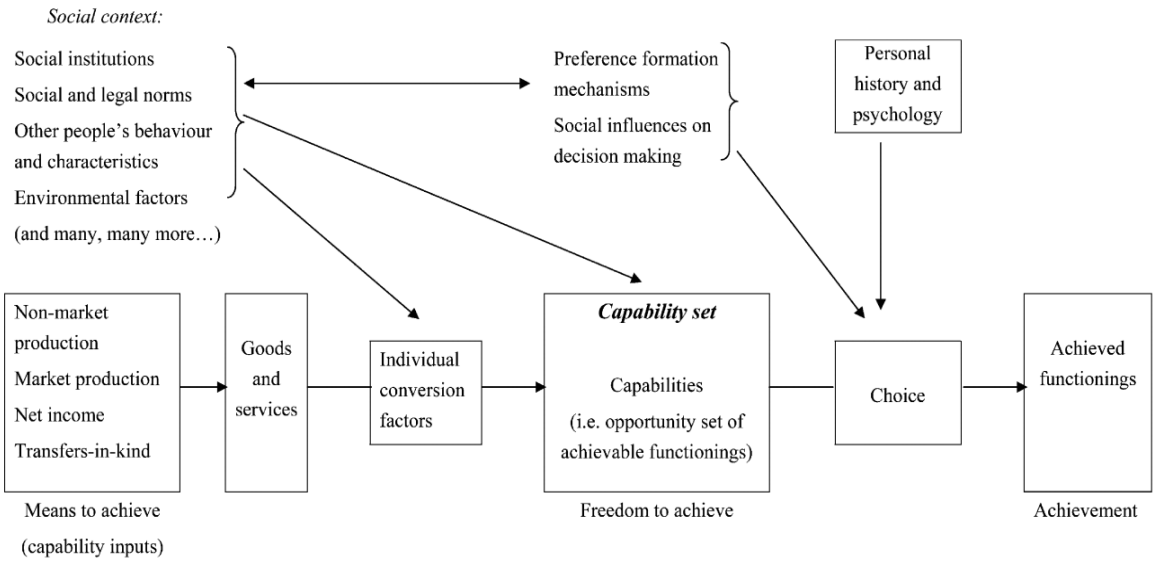
The primary concepts of the capability approach are based on capabilities and functioning, which Sen (2003) believes can help assess people's quality of life and wellbeing situations. According to Sen (1985, 1992, 1999), capabilities are the substantive freedom a person enjoys in choosing how she/he wants to live a lifestyle that she/he values. Sen (1992) emphasises freedom, instead of the means to achieve that freedom. However, this does not imply that he undermines the means to achieve freedom. He uses the term capability instead of agency, when agency is directly or indirectly related to wellbeing achievement[58]. Sen (1992) introduces the concept of basic capability, while using this framework for poverty analysis, where he defines basic capability as "the ability to satisfy certain elementary and crucially important functionings up to certain levels" (p45). It generally implicates the minimum subsistence. Sen (2006) exemplifies basic capabilities as the abilities to avoid premature mortality, to be able to maintain good health, to attend school and become educated and other basic necessities considered essential by the respective person in a particular context. He argues that, in addition to these crucially important basic capabilities, "various social achievements, including - as Adam Smith (1776) emphasized - being able to appear in public without shame and being able to take part in the life of the community" are also vital for the wellbeing of those living in situations of poverty (Sen 1992, 2006, p35). Acknowledging the critical role of 'informational availability', he states that the list of basic capabilities is not universal and is open for changes related to respective contexts (Sen 1992, p53).

Sen refers functioning to various things a person may succeed in 'doing or being' (1999, p75). He defines functioning as 'an achievement of a person: what he or she manages to do or to be' (Sen 1985, p7). He argues that along with primary goods, the relevant personal characteristics also work as conversion factors that help commodities or resources turned into functionings (Sen 1999). Some other scholars (Goerne 2010, Robeyns 2005) worked further to conceptualise these conversion factors. While Sen (1993) also includes social structures or social arrangements as one of the conversion

[58] In order to ensure coherent use of terminologies and to avoid any confusion or ambiguity, I use the term 'capability' to refer to 'agency', the way Sen (1992) does when agency is linked with wellbeing. This is because focus of my research is also on wellbeing and I use Sen's capability approach framework to analyse my data.

factors, Jackson (2005) includes institutions as another conversion factor in the list. However, a more specific categorisation of conversion factors is developed by Robeyns (2005). She categorises possible conversion factors into three distinct groups: personal, social and environmental. The following Figure 2.3 illustrates a pictorial view of the capability approach; incorporating the conversion factors Robeyns proposes (2005).

Figure 2.3: Illustration of capability approach



Source: Robeyns (2005)

Conversion factors can be considered closely linked to empowerment, and work as enabling factors for individuals to achieve their desired states of being or doing. In the capability approach framework, emphasis is given more on capabilities than on the resources, because relationships between goods and what an individual can do or can become, varies from person to person and depends upon respective contexts (Sen 1993). Transcending the minimum subsistence ideas of poverty, Sen (1983), Townsend (1979), Doyal and Gough (1991) argue that basic human necessities cannot be understood properly in physical terms and that the essence of humanity is the capacity to make choices. Therefore, measures to conceptualise wellbeing of those living in situations of poverty should consider capabilities and capacity to participate (Bradshaw 2001).

An account of the development of capability is also provided by Garrett (2003), where he reflects on Sen's concept. According to Garrett (2003) most people are born with some raw capacities like thinking, watching, walking, and so on, that help them decide

about situations in their life on both individual and collective levels. In his view, these raw capacities get converted into capabilities in the presence of converting factors. He argues that capability may or may not turn into activity, depending upon personal or external factors. This activity can be considered synonymous to what Sen (1993, 1999) terms as functioning, and in a similar way, the converting factors as the conversion factors. Garrett (2003, p1) visualises the phenomenon like the following sequence:

Raw Capacity → Capability → Activity

Therefore, capability is linked to activity but it is not identical to it. It can rather be considered as a means of achieving the activity. In a similar manner, substantial freedom is also argued to be linked to wellbeing, which is not identical to wellbeing achievement but rather a means of achieving wellbeing (Garrett 2003). Sen's concept of capability is further taken forward by Nussbaum (2011) who identifies ten specific capabilities.[59] She goes on to advocate that three elements - migration, Internet and global warming - should also be included in the list, in order to address the contemporary social dynamics. However, Clark (2009) considers Nussbaum's list of capabilities to be incomplete and claims that the list of capabilities should rather emerge through intercultural contributions rather than imposed by an individual.

The capability approach is an open and flexible framework, allowing it to be used for various contexts where individual concerns are the main focus (Alkire 2002; Clark 2009). Thus, it can be argued that it carries potentials for bottom-up approaches towards development. Clark (2009) argues that incorporating related concepts or theories with this framework can develop a new theoretical framework in order to address issues in new contexts. Based on the span of capabilities, the capability approach can be utilised for assessing poverty and wellbeing situations, or human development, where in the case of poverty assessment the number of crucially important capabilities under consideration, is considerably smaller than when it is for assessing wellbeing (Clark 2009). However, while conceptualising wellbeing of those living in situations of poverty, the capabilities needed to analyse both poverty and wellbeing situations, might not be considerably different. Furthermore, the assessment can depend on the respective people, their contextual realities and social arrangements.

[59] The ten categories of capabilities identified by Nussbaum (2000) are i) life, ii) bodily health, iii) bodily integrity, iv) senses, imagination, and thought, v) emotions, vi) practical reason, vii) affiliation, viii) other species, ix) play, and x) control over one's environment.

2.3.2.1.1. Capability approach and ICT

Some experts now consider the change towards being a knowledge society as one aspect of development. This can be measured in terms of the consumption and production of ICT, and the increase in Internet hosting (Mansell & Wehn 1998). A large number of scholars, including Sen (2010) and Nussbaum (2006) have addressed the potentials of ICT in enhancing human capabilities (Spence & Deneulin 2009; Hamel 2010; Qureshi 2011; Birdsall 2011). In spite of the persisting inequalities and gaps in access to and usage of ICT, it is argued that ICT can have positive impacts on human development in the areas of health, education, and income, as well as in participation and empowerment (Hamel 2010). When considered through the lens of the capability approach framework, functionings around ICT might not always indicate mobility or physical movement, but rather might be in the forms of thoughts, communications, interactions and/or other different types of activities facilitated by ICT as an enabling infrastructure or resource (Gregory 1981). These functionings, which are linked with wellbeing achievements, can also include knowledge development through learning with the help of ICT or, more specifically, e-learning. In these ways, ICT is claimed to have a legitimate and central position in the capability approach framework as a resource, which can support achievements of valued forms of functionings or wellbeing, in different contexts (Johnstone 2007).

ICT can play crucial roles in achieving developmental outcomes when development is conceived as freedom (Sen 1999; Corbridge 2002). Sen (2010) specifically argues that mobile phones, one of the popular ICT options, have the potential to enhance freedom of an individual, because one can enjoy enhanced connectivity with others. He therefore conceives ICT supported connectivity as empowering, or freedom enhancing, when it is valued by people. However, Johnstone (2012) argues that the relationships between technology and human capabilities are not always simple and straightforward. She claims that the same technology may induce both capability enhancing and capability destroying influences over the same person, and thus can affect wellbeing as well as agency of that person. Therefore, there should be a system to evaluate capabilities from an ethical point of view, as some technologies can foster undesirable changes with regard to moral issues, such as child labour or women's involvements in economic activities outside their home against sociocultural values (Oosterlaken 2012). This dichotomy invites a debate regarding which capabilities to value and for whom, and how, as well as, whether collective capabilities in groups or social structures should be

addressed in this capability approach framework (Comim *et al*. 2008). In this regard, in order to balance the dual effects of technology over capabilities, scholars argue that the process of technology design should be revised to address ethical inquiries, such as who designs, and what is designed, and for whom (Dong 2008; Oosterlaken 2009; Toboso 2011); and at the same time to accommodate different perspectives of wellbeing (Oosterlaken 2012).

Two factors have made ICT a dominant factor in the literatures of capability approach and ICT: one is the popularity of ICT as a tool to fight against poverty, and the other is the indeterminate features of ICT, which appropriately fit it in a range of areas such as education, health, livelihoods, recreation, and democracy (Oosterlaken 2012). However, some scholars criticise that although a range of different factors are closely connected to the capability development process through ICT; emphasis is mostly given on the distribution of related resources and on access to ICT (Alampay 2006; Hellsten 2007; Madon 2008; Zheng 2007). In view of Van den Hoven and Rooksby (2008), access to information has become a 'primary good' – an item every person can value for its usefulness – as defined by Rawls (1971).

Therefore, irrespective of the different approaches to conceptualise wellbeing, the definitions of wellbeing centre on the goal of achieving a life a person values and enjoys living. Sen's conceptualisation of wellbeing connects people's sense of freedom and values, to their respective contexts. As a result, his conceptualisation of wellbeing remains broad as well as can be adaptable enough to accommodate a particular context. According to Sen's approach, conceptualising wellbeing of those living in situations of poverty in the realities of developing countries, involves issues around development, which can be explained by his capability approach framework. When seen through Sen's capability approach framework, learning can also be considered as a means of wellbeing, if that helps a person achieve his/her desired state of being or doing. However, there is little existing literature around the relationships between learning and achievement of wellbeing in developing countries.

2.4. Learning and development nexus

Although the role of learning in achieving wellbeing in the contexts of developing countries has not been evidenced by related literature to a considerable extent, learning itself has been prioritised as a means of development (UN 2015). It is argued that

learning can promote good health practices, improved agricultural productivity, off-farm employment opportunities, gender equality and poverty reduction, all of which have implications for developmental gains (Waage *et al.* 2010). In these ways, learning not only addresses achievement of developmental goals, but also addresses wellbeing achievements of those living in situations of poverty in developing countries. In the new sustainable development goals, learning, along with education, is also emphasised as a means of development, particularly in the form of lifelong learning, to offer people with opportunities to develop knowledge and skills (UN 2015). Although formal education is prioritised by the UN (2015) to ensure empowerment and human capital at individual level, it has also been criticised for failing to address the issues around development in an effective manner (Cohen 2006; Waage *et al.* 2010).

Initiatives around knowledge development are not a new phenomenon in developing countries (Coombs & Ahmed 1974). These initiatives are undertaken because the social and developmental impacts of knowledge and learning are as significant as those of the economic initiatives (OECD 2001). However, these knowledge development initiatives are criticised because they are seen to promote a one-way flow of knowledge (Chambers 1983; Freire 1970). The criticism claims that the initiatives support a banking concept of education, where knowledge is bestowed upon others who are considered to be less knowledgeable, by those who share the knowledge and consider themselves knowledgeable (Freire 1970). This particular approach is identified by several scholars (Coombs & Ahmed 1974; Ilcan & Phillips 2006). They claim that often the underlying motives behind this type of knowledge for development initiatives from different institutions are to reinforce their other initiatives, rather than to support knowledge building on its own merit. They claim that this reinforcement works through promoting specialised knowledge aligned with the other initiatives from those institutions, instead of reflecting on the contextual significances. They further argue that this reinforcement fosters development of knowledge networks, which are embedded not within the respective contexts, but rather within different other development initiatives of those institutions. Thus, the contextual significance of the existing knowledge for development initiatives, taken by different institutions, is questioned by these development scholars (Coombs & Ahmed 1974; Ilcan & Phillips 2006).

In support of the above concerns, development scholars claim that most of the knowledge for development initiatives only promote learning opportunities in

agricultural matters[60], and do not focus adequately in the areas of health, nutrition and childcare issues that have substantial influence over the wellbeing of those living in situations of poverty (Chambers 1983; Coombs & Ahmed 1974). Sen (1993) also considers issues around health as some of the most critically important factors that can influence rural people's wellbeing. Identifying the lack of adequate focus on health in knowledge for development initiatives, Chambers (1983) claims that:

> "there are many cases, especially in health and nutrition, where professional outsiders' knowledge can help rural people better to achieve what they want" (p97).

This shows that access to knowledge in the areas of health and nutrition is important for rural people in order to enable them to achieve their wellbeing. However, the knowledge for development initiatives, are alleged to underestimate this contextual reality around the significance of developing knowledge in the areas of health and nutrition (Chambers 1983; Coombs & Ahmed 1974). In order to empower rural people effectively to help them achieve their wellbeing, knowledge for development initiatives need to incorporate the kinds of knowledge that are contextually meaningful in the pursuit of wellbeing (Laszlo & Laszlo 2002).

Sometimes development scholars are divided in their opinions with regard to accepting particular types of knowledge and their relevancy. Local knowledge is a good example of this. Some scholars argue that integration of local knowledge with scientific knowledge is a problematic endeavour (Briggs 2005; Payton *et al*. 2003). However, Chambers (1983) claims that together they can achieve a synergy.

> "Rural people's knowledge and modern scientific knowledge are complementary in their strengths and weaknesses." (Chambers 1983, p75)

However, even if development scholars agree on incorporating local knowledge in the knowledge for development initiatives, there exists another critical problem – a lack of contextual information, particularly in the global south, which is required if local knowledge is to be incorporated in those initiatives (Narayanaswamy 2013). This is argued as one of the reasons why knowledge for development initiatives ignores the

[60] See Ahmed, A.U. (2004) for knowledge for development initiatives in Bangladesh.

incorporation of local knowledge (Narayanaswamy 2013). In order to facilitate inclusive knowledge development, contributions from both rural and knowledge communities can not only resolve the dearth of contextual information, but also can let the knowledge communities contribute in a more effective and contextually significant way.

Learning is an inseparable fundamental step in the knowledge for development approach (UNDESA 2015). As a means of development, some scholars speak in favour of informal ways of learning, as opposed to formal learning, claiming that it helps to acquire and develop knowledge, skills, attitude and insights from day-to-day experiences and from exposure to different environments (Coombs & Ahmed 1974). In this regard, they also incorporate different informal approaches, such as agricultural extension and farmer training programs, adult literacy programs, and various community programs in the areas of health, nutrition, family planning and cooperatives (Coombs & Ahmed 1974). While development scholars argue in favour of informal means of learning for those living in situations of poverty (Coombs & Ahmed 1974), Hager and Holliday (2009) claim that boundaries between formal and informal learning remain blurred. Folkestad (2006) also argues that formal and informal learning are not a dichotomy, but rather two poles of a continuum. Folkestad differentiates formal and informal learning along four dimensions: the situation where learning takes place, the learning style, ownership of learning with regard to who controls and makes decisions, and intentionality. However, Malcolm, Hodkinson and Colley (2003) claim that both formal and informal learning are intimately interrelated: formal learning can take place in informal situations, and informal elements exist in formal learning. They argue that the nature of this interrelationship and their influence over the learner and the learning experience depend on the social, cultural, political, economic, organisational and historical aspects of the context (Malcolm *et al*. 2003, p313). In developing countries, ordinary people usually learn through informal means of learning, which generally takes the form of learning by doing (Boonyabancha & Mitlin 2012; Feder, Just & Zilberman 1985; Foster & Rosenzweig 1995). In the agrarian rural contexts of Bangladesh, ordinary rural people typically learn by means of doing and through observations (Ahmed, A.U. 2004; Khan 1997; Paris *et al.* 2005). When learning involves technological innovation, then learning by doing, using, and interacting, are found to be more common and effective, which can be argued to be valid for e-learning as well,

because it involves technological innovation in the areas of ICT (Arrow 1962; Jensen *et al*. 2007; Lundvall & Johnson 1994).

Therefore, although development scholars are divided in their opinions around effectiveness of the existing knowledge for development initiatives, they are confident about the roles knowledge can play in achieving developmental outcomes. The differences in opinions are mostly around the focus of the areas of knowledge, their contextual relevancy, and underlying motives, rather than the role of knowledge in supporting the achievement of developmental outcomes. Learning, as an integral part of knowledge development, can thus be considered as pivotal in achieving developmental outcomes. Furthermore, in the realities of developing countries, informal learning appears more relevant in this regard. However, given the persisting collectivist social reality in Bangladesh (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995) and intimate relationship among society, social arrangement and development (Sen 1992), it is imperative to understand learning through the lens of social theories to conceptualise e-learning as a means of wellbeing in the context of rural Bangladesh.

2.4.1. Social theories of learning

The social theories of learning conceive learning in a broader perspective as a social phenomenon in light of our lived experiences, beyond the commonly known institutionalised form of teaching based approach to learning (Wenger 2009). These theories associate learning with the respective social realities of the learners extending the concept of learning beyond being an individual process within the learner. Differences in these theories are grounded in 'the multidimensional problem of learning' and the 'fundamental differences in assumptions about the nature of knowledge, knowing, and knowers, and consequently about what matters in learning' (Wenger 2009, p210). Lave and Wenger (1991) term the main focus of social theory as being the peripheral participation and relate it to the respective context and cultural reality arguing for the situated nature of learning. Wenger (1998, 2000) in his later work extends the concepts of social learning relating it to organisation and terms the focus of it as social participation.

The essential elements of social theory of learning, which are intimately interconnected, include - the respective community, related practice, identity that gets developed

through learning, and the meaning developed through learning by the respective learner (Wenger 2009). Bandura's (1977) view on social learning theory argues that people learn from one another and they do so with the help of direct experience or observing others, practicing or imitating, and modelling or structuring the activity/process in a simplified form. In view of the social learning theories, learning is conceived as a social phenomenon which takes place in the form of communities of practice where context and culture play vital roles (Lave & Wenger 1991; Wenger 2009).

These factors (context and culture) might be compared to what Gewirtz (1972) terms as contextual determinants, or, contextual qualifiers or conditions which influence the learning process when learning is conceived through the lens of social learning. Sometimes these factors can support the learner overcome the challenge of transcending individual capacities in developing an understanding or related knowledge in order to reach out to the respective zone of proximal development. The zone of proximal development refers to 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers' (Vygotsky 1978, p86). This is the case particularly when the learner can have access to expert support from within the social milieu. Drawing on Vygotsky's approach to interpreting the learning process, Cole (1985) argues for the roles society can play in the mind of the learner, claiming the influence of culture in creating cognition, which also supports the argument around the zone of proximal development. In the collectivist social reality in Bangladesh (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995), expert support from within the social milieu thus can be argued to enhance the freedom of learning for the learner, which can then be considered as capability enhancement when seen through Sen's (1985) capability approach framework. This is because the local expert support might enable learners to strive for learning beyond what they could have learned on their own.

In the context of development in developing countries, social learning - particularly in the form of learning by doing (Boonyabancha & Mitlin 2012; Feder, Just & Zilberman 1985; Foster & Rosenzweig 1995) and learning by interacting (Anderson & Lundvall 1988) - is argued to benefit from the effective use of technology (Williams, Stewart & Slack 2005). This aspect of technology thereby links e-learning to the achievement of

developmental outcomes through learning and developing awareness, skills and knowledge.

2.5. Gender and ICT4D

Gender is considered as a development issue (Momsen 2010) which is also reflected by both the Millennium Development Goals (MDG) and the recent Sustainable Development Goals (SDG) as a crucially important agenda to bring developmental outcomes (UN 2000, 2015). Technologies, ICT in particular, are claimed not to be gender-neutral but are considered relevant to the lives of women, as they are to those of men, even if women are resource poor and are in situations of poverty (Odame 2005). In Bangladesh, being female is argued to be strongly correlated with being poor and encountering more challenges compared to what a male encounters when wellbeing is concerned (Cannon 2002). The gender aspect of ICT4D is therefore important in order to conceptualise e-learning as a means of wellbeing achievement because more than half the total population of rural Bangladesh are women who live in persisting patriarchal reality (BBS 2011; Cain *et al*. 1979; Chowdhury 2009; Kabeer 1988; Kabeer *et al*. 2011) and because gender is incorporated into the broader concept of poverty and wellbeing (Lipton & Maxwell 1992).

Relevancy of gender issues particularity with regard to ICT4D can be considered as grounded in the persisting relationships between technology and gender. Technology is a sociotechnical product that is socially shaped, but in most cases, the influences driving the changes in technology come from men (Klein & Kleinman 2002; Latour 1990; Wajcman 1991, 2004). This is because historically there has been an under-representation of women in the fields of technology and science (Wajcman 2004). Gender is conceptualised in a range of ways by different researchers. Some scholars conceive it as a social construct (Kaliyath 2015, Risman 2004), while Momsen (2004) defines gender as "the socially acquired notions of masculinity and femininity by which women and men are identified" (p2). A sociological approach explains gender in terms of gender roles,[61] socialisation, and structured opportunities,[62] which varies between and within different cultures (Kaliyath 2015; Udry 1994). Wajcman (2004) considers gender

[61] Gender roles are a set of acceptable behaviours which are differentiated by sex and are governed by gendered norms (Udry 1994).

[62] Structured opportunities are socioculturally defined activities or behaviours women and men are expected to follow in different phases of their life (Kaliyath 2015; Udry 1994). For instance, in the realities of developing countries men are expected to get engaged into activities outside their homes whereas women are expected to carry out household based activities (Kaliyath 2015).

as a social achievement that encounters a process of reiteration because gender is not fixed and is constructed through interactions. Wajcman (2009) argues that the cultural construction of gender, which is also endorsed by historical evidences, implicates the association of technology and men as a taken-for-granted phenomenon and presents technology as a cultural construct. She further argues that although gender is embedded in technoscience, the relationship between technology and gender is not fixed. She claims that the technology gender relationship is also shaped by broader socioeconomic circumstances. Understanding this relationship through the lens of respective socioeconomic circumstances can help conceptualise women's experience of e-learning in their lived realities.

Regarding technology-gender relationship, Wajcman (2004) points out that even in this era of technological changes, women's under-representation is strong in the creation and design of technical systems resulting a masculine dominance over technology, which in some ways echoes the link between masculinity and technology (Wajcman 2009). She criticises Castells, a powerful promoter of networked society, as he does not address the gender relations of technology design. She argues that there exists a vicious circle of women's poor representation in the domains of technology. In order to address this, she advocates for involving women in technology policy formulation. It can be argued that this approach might help to address the realities women face while accessing e-learning in developing countries and might eventually help to minimise some of the related barriers.

However, while considering the realities of developing countries, Mitter and Ng (2005) believe that concepts of Western feminism should not be imposed due to the considerable differences in social norms. Transformation of gender relations by ICT also depends on the sociocultural and political contexts, which vary in different countries (Mitter & Ng 2005). It is also claimed that discourses on ICT have rarely focused on the perspectives of the developing countries where the majority of people both male and female have been suffering from the exclusion rather than benefiting from the inclusion potentials of ICT (Mitter & Ng 2005). Hafkin and Taggart (2001) particularly criticise that there exists a persisting attitude towards women which considers them as passive recipients of information instead of active users of ICT. However, some scholars claim that ICT has brought substantial benefits to women in

developing countries, in terms of livelihood opportunities,[63] and has offered them scopes to renegotiate gender relations at both household and community levels (Kelkar & Nathan 2002; Lee 2004; Mitter & Ng 2005). In this regard, Odame (2005) further specifies that usually these women are not the rural women, rather are the literate, wealthier and younger urban women. However, the gender division of labour, which is shaped by respective sociocultural norms and values, is argued to influence the technology-gender relationships in any particular context (Williams & Edge 1996). For instance, in the patriarchal rural Bangladesh, women are generally involved in household based activities leaving limited scopes for them to interact with technology (Cain *et al*. 1979; Chowdhury 2009; Kabeer *et al*. 2011; Momsen 2004). In the context of developing countries, women not only have less income, education and mobility, but also face religious and cultural barriers which substantially limit their access to and use of technology (Odame, 2005). However, Mitter (2005) claims that ensuring access to ICT cannot be the only way to empower women in developing countries, rather those women should also take part in related policy formulation, as is argued by Wajcman (2009).

To integrate women in the ICT revolution and at the same time to reduce gender discrimination in ICT, Marcelle (2005) invites international decision makers to consider changes in the four critical areas:

> "ICTs policy making, ICTs applications for promotion of women's economic empowerment, ICT-enabled health and education services, and ICT-mediated public life participation." (p21)

Marcelle's suggestions can be argued to be grounded in the claim that technology has the potential to liberate women from their traditional barriers in achieving their desired states of being or doing, that is their wellbeing (Wajcman 2004). ICT, particularly the Internet, is claimed to have the potentials to foster positive changes in women-technology relationships (Wajcman 2004). If the changes mentioned above can ensure favourable technology-gender relationships in respective sociocultural contexts, then both men and women might benefit from ICT, including e-learning, in a similar manner.

[63] ICT has created livelihood opportunities for educated young women who would otherwise have remained underemployed or even unemployed (Mitter & Ng 2005). These opportunities are created through outsourcing of work from western developed countries to developing countries, but at a cost of international division of labour (Mitter & Ng 2005).

2.6. E-learning

E-learning as a concept is contested and lacks a coherent theoretical stance to fully explain it in different contexts (Andrews 2011). Bowles's (2004) following claim shows this persisting difference in opinion around different aspects of e-learning:

> "For all the publicity it has received in recent years, e-Learning remains something of an enigma, and its boundaries are far from clear." (p3).

In an attempt to provide a detailed account of e-learning, Haythornthwaite and Andrews (2011) put forward their arguments in the following way:

> "First, we see e-learning as a transformative movement in learning… Second, we do not see e-learning as bounded by institutional structures of courses, programmes or degrees, but instead as embracing the way learning flows across physical, geographical and disciplinary borders. Third, we see e-learning as perpetual, sustained over a lifetime and enacted in multiple, daily occurrences as we search for information to satisfy our learning needs and contribute content that promotes our and others' understanding. …Fourth, we see e-learning as an engaged act created through both technical and social decisions." (p2)

Here, Haythornthwaite and Andrews offer a broader perspective of e-learning, which also includes informal means of learning and does not confine e-learning to a particular ICT option. Although a single definition of e-learning is yet to be established (Selinger & Pearson 1999; Sloman 2001; Rosenburg 2001), it can be conceived as a learning experience utilising electronic means such as the Internet, a mobile phone or telephone, television, radio, and all of which can electronically or virtually connect an individual to information for knowledge development (Collis 1996; Guri-Rosenblit & Gros 2011; Salmon 2000, 2004; Selinger & Pearson 1999).

How we learn, with whom, and by what means are continuously changing, and pervasive technologies, particularly ICT, adds further momentum to these changes. Rao (2011) admits that although e-learning is now associated mostly with computer and Internet technologies, it was initiated through radio. However, this retrospective approach focuses only on educational teaching and learning purposes, instead of learning in a broader sense. Gulati (2008) considers computers, the Internet, television, radio and telephone as the means for e-learning, but focuses only on formal education, rather than around learning in a broader sense. Unwin (2009) also portrays uses of ICT

for learning, mostly around formal education and related institutional setups. Andrews (2011) criticises these existing approaches towards conceptualising e-learning, which he considers to be concerned more with 'e-teaching'; he emphasises that it is essential to "…note that e-learning includes online and offline learning via electronic means" (p108). It shows that there have been confusions and differences of opinions around the technological means of e-learning.

In the same way that e-learning correlates with different technological means, theoretical approaches towards conceptualising learning also vary and correlate learning with different aspects, including psychological, social, environmental, and political aspects. Although behaviourist,[64] and cognitivist[65] learning theories could be applied to e-learning, constructivist thought fits better to conceptualise e-learning through informal means of learning, because of the following reasons.

i) It considers learning as an active process of constructing personal knowledge from learning experience.

ii) It emphasises situated learning by considering learning as a social process (Greeno, Collins, & Resnick 1996).

iii) It promotes multi-contextual learning so that learning can be shared and applied broadly (McLeod 2003).

Although theories of learning do not sufficiently conceptualise e-learning, there exist some commonalities between conventional learning and e-learning theories. For example, both perceive learning as a psycho-social process, requiring intrinsic and extrinsic motivations to learn, and both believe that learning initially involves shorter and medium-term changes in states of mind and knowledge (Haythornthwaite & Andrews 2011). Despite e-learning still not being fully explored and conceptualised, it has already posed a challenge to some of the conventional approaches to learning, such as the face-to-face learning (Andrews 2011). For instance, in conventional face-to-face learning, the learners need to have a particular line of communication, such as the physical presence of the source of learning. However, e-learning challenges these requirements by offering multiple lines of communication through different technologies, particularly ICT, and allows for a learning experience independent of real time (Haythornthwaite & Andrews 2011). Considering the broader notions of learning

[64] According to behaviourist thought, learning is considered as a chance in observable behaviour which is resulted by external stimuli in respective environment (Skinner 1974).

[65] According to cognitivist thought, learning is considered as a change in the schemata of the learner which involves thinking, abstraction, reflection, memory and motivation (Ally 2004; Cooper 1993; Ertmer & Newby 1993; Mödritscher 2006).

and the inadequacies of existing learning theories to conceptualise e-learning in different contexts, Andrews (2011) demands that a new theory of learning should be developed to conceive e-learning appropriately, incorporating theories around social informatics, multimodal communication and digital media.

E-learning can be argued to have four different aspects - learner agency, participatory culture, peer production, and framing/re-framing (Haythornthwaite & Andrews 2011). The motivational dimension of e-learning is embedded in the participatory cultures and peer production aspects, because a learner is considered as a maker of knowledge and knowledge connections, rather than just a passive recipient of knowledge (Haythornthwaite & Andrews 2011). In this way, e-learning can be considered to promote a bottom-up perspective around learning and knowledge development. The participatory aspect of e-learning is argued to support those living in situations of poverty with expressing their different necessities, finding different skills and knowledge, reevaluate their priorities, and then choosing what they want from the learning process that best represents their lived realities (Riley *et al.* 1999). Thus, the characteristics of e-learning refute the concept of treating learners as empty vessels, as is implied by behaviourist learning theory, and promote a new type of social and interactional dynamics around learning (McKendry 2007).

Most of the existing models of e-learning are based only on formal education (Collis & Moonen 2001; Salmon 2000, 2004; Meredith & Newton 2003). In most cases, e-learning is conceptualised around computers and the Internet, and for institutional/organisational or professional purposes, or, for formal education (Vargas & Tian 2013; Liaw 2006; Ravenscroft 2001; Brown & Charlier 2013). As a result, prevailing models of e-learning can be argued to be less appropriate for informal ways of learning in developing countries where low-tech ICT options such as mobile phones, television and radio are found socially embedded, in comparison to high-tech ICT options, such as computers and the Internet (Heeks 2008). For instance, Salmon's (2000) e-learning model assumes that users of e-learning systems are already familiar and comfortable with telephone and email communication. This is not the case, with many of those living in situations of poverty in developing countries. However, Edejer (2000) argues that ICT, in particular the Internet, has the potential to offer choices to those living in situations of poverty in developing countries, with regard to knowledge development in the areas of health. Nonetheless, my literature review could not find any

related study which looked to conceptualise e-learning as a means for wellbeing in developing countries.

2.6.1. E-learning in developing countries

Due to advancement of technologies, adoption of e-learning has been increasing rapidly, but global increased use of technologies, particularly ICT, mainly benefits developed countries. This widens the gaps between developed and developing countries in terms of ICT adoption, and therefore the adoption of e-learning as well (Carayannis *et al*. 2006). Generally, an underlying transfer and diffusion approach of knowledge sharing remains prominent in the e-learning initiatives in the developing countries (Johnson, Lorenz & Lundvall 2002). E-learning is mostly conceived as an educational technology and its relevancy is considered around the domains of pedagogy for formal education (Andersson 2008; Andersson & Grönlund 2009; Bhuasiri *et al.* 2012; Gulati 2008; Guri-Rosenblit 2005; Pagram & Pagram 2006; Paola Torres Maldonado *et al.* 2011; Raab, Ellis & Abdon 2002; Sife, Lwoga & Sanga 2007; Ssekakubo, Suleman & Marsden 2011). Some people use e-learning and distance education interchangeably, but the former is the electronic technology supported version of the latter (Guri-Rosenblit 2005). Although most of the e-learning initiatives involve computers and the Internet, mobile phone based e-learning, or m-learning, is also used to facilitate formal education (Brown 2005). Traxler (2002, 2007) advocates for m-learning as a way of incorporating learners' mobility as another dimension in e-learning, but limits the relevancy of e-learning in the areas of formal education and organisational purposes only. Television is also found effective for e-learning, though in most cases for educational purposes.[66] Spar (1999) advocates use of television and mobile phones for e-learning, but limits the areas of involvement to education and health services. However, in most cases, use of e-learning in the formal education system in developing countries cannot bring anticipated success (Ssekakubo, Suleman & Marsden 2011).

Successful e-learning initiatives are found as cost effective means of learning, but have rarely been adopted beyond the pedagogical purposes (Gulati 2008, Pagram & Pagram 2006; Sife, Lwoga & Sanga 2007). Occasionally, in agricultural extension services, e-learning is embedded through telecentre-based approaches (Aker 2011). However, the context of e-learning in the developing countries faces major challenges with regard to

[66] For instance, Bof (2004) illustrates how television remains an effective e-learning tool in training teachers in Brazil, overshadowing the potentials of the Internet, which is less accessible to most of the respective local people.

their infrastructure and sociocultural environments (Andersson & Grönlund 2009; Traxler 2007; Traxler & Kukulska-Hulme 2005). Scholars claim that sometimes contextual relevancy or sociocultural fitness of the e-learning content is ignored, and a one-shoe-fits-all approach is imposed, which eventually affects the adoption of e-learning, and challenges its effectiveness (Pagram & Pagram 2006). Scholars have identified some critical success factors for e-learning in developing countries, which are: awareness development in technology, learners' motivation, learners' approach towards e-learning and adequate contextual contents (Bhuasiri *et al*. 2012). However, these critical success factors correlate use of e-learning in formal education only.

2.6.1.1. E-learning in Bangladesh

The literatures I reviewed show that in Bangladesh e-learning is usually conceived as the learning tool to facilitate formal education only. This limited utilisation of e-learning potential is identified only in project-based initiatives at academic institutions, rather than as a structurally integrated means of learning at academic institutions (Grönlund & Islam 2010). In most cases, e-learning is pursued by means of computers and the Internet, but sometimes mobile phone and television are also used (Grönlund & Islam 2010; Islam & Selim 2006; Walsh 2011; Walsh *et al*. 2013). These e-learning initiatives usually involve students as their target learners (Grönlund & Islam 2010; Islam & Selim 2006). However, e-learning is also used as a means for training the teachers, using mobile phones (Walsh 2011; Walsh *et al*. 2013). In this case, e-learning is used in order to enhance teachers' proficiency in English language (Walsh *et al*. 2013).

In most cases, where e-learning is integrated as a means of learning, the underlying presumption remains that learners have adequate knowledge about the available resources required for e-learning, such as computers, and the Internet (Karim, Mina & Samdani 2011; Khalid & Nyvang 2013). This can be considered as a contested assumption, because only 5.7% households in Bangladesh have access to a computer and only 4.8% have access to the Internet (BBS 2015a). Therefore, another interpretation of the above presumption can be that only those who have access to required resources are considered as the learners for e-learning. Nonetheless, it can also be criticised for being weakly representative of the overall reality where the majority of the people in Bangladesh do not have access to computers and the Internet. Furthermore, about 60% of rural people live in off grid areas with an inconsistent power supply,

which is essential to adopt e-learning by means of ICT.[67] Most of these researches around e-learning in Bangladesh, also argue that ICT has the potential to provide self-directed e-learning opportunities. This offers a narrow view of the potential of e-learning, because it shows that respective scholars consider e-learning suitable only for those who are already ICT skilled. This approach to e-learning not only excludes those who do not have the required ICT skills for e-learning, but also ignores the fact that learning styles are embedded in particular societies, and therefore vary in rural and urban realities (Greeno, Collins, & Resnick 1996).

Therefore, in Bangladesh, e-learning is primarily used to support the learning experiences of students, teachers and some professionals, such as health care professionals (Mridha *et al*. 2013). The existing studies around e-learning consider it only for education purposes, instead of learning in a broader sense, which would then consider developmental outcomes and wellbeing achievements. These instances of e-learning are also not part of everyday realities, but rather they are embedded in project based initiatives, which run for set periods of time. Furthermore, these e-learning initiatives do not offer learning opportunities for ordinary rural people. Although e-learning initiatives in Bangladesh, engage only educated and ICT skilled people, but they also encounter some challenges, which include: lack of proficiency in English language; lack of affordability to own ICT devices; lack of contextually relevant contents; inconsistent power supply; shortage of ICT experts at local level; and lack of adequate understanding around different applications of ICT, particularly computers and the Internet (Mridha e*t al*. 2013).

These barriers reflect the lived realities facing the educated ICT skilled people in Bangladesh. However, these barriers do not reveal the challenges faced by ordinary rural people who are not skilled enough in ICT to adopt e-learning in a self-directed manner, nor do they indicate the challenges faced due to particular gender identity. In this regard, it is important to consider how best to accommodate contextual realities in order to conceptualise e-learning as a way to increase wellbeing for those living in situations of poverty in rural Bangladesh (Henwood *et al*. 2000). This perspective brings together the factors positioned at the intersection of society and technology, and thereby incorporates sociotechnological aspects of e-leaning.

[67] About 40% rural households are covered by grid-based power supply and villagers still struggle to access this limited supply due to high cost (Khandker *et al*. 2014). Islands are usually left out of the grid-based power supply.

2.6.2. Sociotechnological aspects of e-learning

Adoption of ICT for e-learning purposes depends substantially on the prevailing sociocultural realities in respective contexts (Avgerou 2008; Henwood *et al*. 2000; Mitter & Ng 2005; Stewart 2007). Use of e-learning by those living in situations of poverty in rural Bangladesh is no exception to that dependency relationship. It can be argued that rural people's adoption of e-learning is shaped by the interrelationships between their sociocultural realities and technological readiness, in terms of their preparedness to adopt ICT. These interrelationships influence their access to ICT, their abilities to accommodate adoption of e-learning in their lived realities, women's adoption of e-learning in the persisting patriarchy, and the extent to which e-learning is effectively integrated into rural realities in Bangladesh (Cain *et al*. 1979; Chowdhury 2009; Kabeer *et al*. 2011; Mitter & Ng 2005). I discuss these interrelationships below, in terms of the sociotechnological factors which include inequality in access to ICT, e-readiness and the social embeddedness aspects of e-learning.

2.6.2.1. Inequality in access to ICT

The inequality in access to ICT can be considered a further example of inequality and social exclusion (Castells 2001). Dey and Ali (2016) argue that in addition to the inequality in access to technology, there also exists inequality in ownership of ICT devices. In considering access to computers and the Internet, this inequality is sometimes termed as the digital divide. Castells (2001) identifies education, social groups, income, ethnicity, age groups, and job status as different dimensions of this particular inequality. Wessels (2010) further adds economic position, language, geographic location, and digital literacy, as the other dimensions of digital divide and addresses social materialization of the Internet and the dynamics of exclusion, to explain its complexity.

Dimensions of inequality in access to ICT are spread throughout economic, social and political aspects of human life (Livingstone, Bober & Helsper 2005). Along with these aspects, lack of required ICT skills, lack of interest, lack of relevancy and gender discrimination also result in inequality in access to ICT (Pick & Azari 2010; Coopers 2006; Ferro *et al*. 2011; Min 2010; Cullen 2003; Dey & Ali 2016). Both Holderness (1998) and Haywood (1995, 1998) argue that the information-poor population, particularly women, have limited participation in this information society (Adam & Green 1998). However, persisting inequality in access to ICT has also motivated and

promoted the practice of shared access to ICT, particularly computers, the Internet and television in developing countries, resolving the lack of affordability of those living in situations of poverty (Cecchini & Scott 2003; Mukerji 2013; Osterwalder 2003; Stewart 2007).

Therefore, inequality in access to ICT is grounded in: individual characteristics, such as ICT skills; contextual social reality, such as gender discrimination; and economic condition, such as affordability of ICT ownership. While shared access minimises inequality in access to ICT to some degree, access scenarios alone cannot explain the complex interrelationships between the social and technological factors around e-learning. This is because these also depend on rural people's overall abilities to adopt e-learning in their lived realities, and on related infrastructural and institutional arrangements, which can be explained by characteristics of e-readiness.

2.6.2.2. E-readiness

E-readiness is conceptualised from a range of perspectives.[68] Most of the perspectives of e-readiness are based on the need for access to Internet; business friendly legal, economical, and social environments; and scopes for creating new business values (Bui *et al*. 2003). Some scholars argue that aspirations to conceptualise e-readiness usually remain in the interest of business and commerce (Aydın & Tasci 2005; Mutula & Brakel 2006). Furthermore, the focus is mainly on high-tech ICT options, such as the Internet, which disregards the low-tech ICT options that are more integrated into the realities of developing countries (Heeks 2008; Mathison 2003). While in most cases, e-readiness is conceived as the ability to pursue value creation opportunities facilitated by the use of the Internet, some scholars also emphasise the role of sociocultural values and practices, in shaping the respective e-readiness scenario (Bui *et al.* 2003; Boateng *et al*. 2011). A collective understanding of e-readiness can help to incorporate the realities of developing countries, while conceptualising e-readiness (ITG 2000).

One of the realities in developing countries that has a considerable influence in shaping the e-readiness aspect is that very few people have the required ICT skills, which are essential for self-directed e-learning (Mridha *et al*. 2013). These skills can influence the development of needs for adopting e-learning, be it through the Internet, computers, or any other ICT option. Stewart (2007) claims that while social context as a whole is

[68] Different Perspectives of e-readiness is presented in Appendix II.

considered as an essential factor for ICT4D, how individuals in a society engage with ICT, is poorly addressed. Reflecting on this aspect of e-readiness, intermediated interactions with ICT is considered pivotal (Sambasivan *et al*. 2010; Gigler 2011). Scholars emphasise that local ICT experts or informal intermediaries can play central roles in the adoption of ICT, and thereby e-learning, by ordinary people (Stewart 2002; Stewart & Hyysalo 2008). Stewart (2007) argues that local experts emerge from within the communities and can create an avenue of support for local people who do not have, or want to develop, ICT skills. Local ICT experts can enable rural people to pursue their freedom of choosing not to learn ICT skills, but still benefit from e-learning through local assistance. However, as the commercial world has not been successful in providing this local expert support, means of providing expert ICT supports at local level remains a challenge to overcome (Stewart 2007).

Another e-readiness measure can be the availability of adequate contextual content for e-learning, which is a potential challenge particularly faced by the developing countries (Graham 2014; Mridha *et al*. 2013). A crowdsourcing approach has been utilised to address this content inadequacy problem around e-learning, although in most cases it is correlated with formal education (Howe 2006; Haythornthwaite 2009; Kukulska-Hulme 2010; Paulin & Haythornthwaite 2016; Pegrum 2010; Tarasowa *et al*. 2013). A few instances also exist where crowdsourcing is utilised to develop e-learning content in the areas of health care training and lifelong learning (Bollinger *et al*. 2013; Punjabi *et al*. 2013). One distinctive characteristic of crowdsourcing based e-learning content development is that, both non-professional experts as well as professionals can contribute to it (Haythornthwaite 2009).

Along the cultural dimension of e-readiness, trust can be considered as an embedded or social recourse that works as an underlying force behind motivation in adopting ICT, and thereby e-learning (Heeks 1999; Heeks & Molla 2009). Trust can be considered as a pivotal factor when e-learning initiatives involve institutional intermediaries (Stewart & Hyysalo 2008). While Duncombe and Heeks (2005) argue that trust is a vital factor in the case of valuing the information received through ICT, Stewart (2003) claims that sometimes people even do not trust the technology itself. Therefore, to conceptualise e-learning as a socially accepted means of learning for those living in situations of poverty, it is essential to understand how they conceptualise trust.

Building on these ways of measuring e-readiness, a study on Bangladesh considers infrastructure as its key e-readiness factor (Bangladesh Country Gateway 2002). However, the study claims that ICT infrastructure is substantially weak in Bangladesh and the rural areas are the worst affected areas. [69] In this study, development of human resources and related awareness development endeavours are prioritised. [70] However, in the reality where low-tech ICT options are socially embedded, this study mostly focuses on high-tech ICT options (Heeks 2008). A later study on global e-readiness maintains that the e-readiness situation in Bangladesh is still poor, when compared to those in other countries (Dutta & Bilabao-Osario 2012).

Therefore, in most cases, e-readiness is measured from a business or commercial point of view and is concerned mostly around access to the Internet, though it incorporates ICT in general. The realities in developing countries show that e-readiness faces challenges around ensuring development of ICT skills among the ordinary rural people. However, local expert ICT assistance can mitigate this challenge to some degree. The inadequacy of e-learning content is another factor that affects e-readiness. Crowdsourcing is used as a measure to ensure supply of e-learning content, but in most cases it is related to formal education or professional training. Trust can also be considered as an e-readiness factor, because trust influences the adoption of ICT, and thereby can affect adoption of e-learning. While e-readiness is an essential factor with regard to adoption of e-learning, it is also important to address issues around effective embeddedness of e-learning in the respective contexts, if e-learning is to be adopted by ordinary rural people as a part of their lived reality.

2.6.2.3. Social embeddedness

Embeddedness is a term economic historian Karl Polanyi introduced to conceptualise the relationships between economic activities such as farming, and non-economic institutions such as kinship, but it is Mark Granovetter who emphasises a deeper association of this interrelationship with society (Granovetter 1985). Granovetter's (1985) theory of social embeddedness claims that people's activities and their attributes are shaped by their respective positions within the networks of "concrete, ongoing personal relations" (p490). Therefore, social relationships can be argued to influence

[69] Findings of this assessment are presented in Appendix III.

[70] Awareness development in the areas of technology use is emphasised for its adoption, even for people living in developed countries (Brewster *et al.* 2014, Taylor *et al.* 2014; Taylor *et al.* 2015), which shows the gravity of the importance of awareness development in developing countries.

people's activities, desires (with regard to particular states of being or doing), and participations in their respective societies. As a result, an intimate relationship between wellbeing and social embeddedness can be argued, because individual's wellbeing in a collectivist closely-knit society is claimed to depend more on his or her in-groups, comprising family members, friends, co-workers and neighbours, than on him or her (Diener & Diener 1995). Therefore, social embeddedness can influence a person's sense of wellbeing through social relationships, particularly in a collectivist closely-knit social reality. As a result, any means of achieving wellbeing in a similar social reality, can facilitate wellbeing achievement, when that can conform to social embeddedness aspect. Social embeddedness, therefore, needs to be considered as an essential criterion of e-learning, if it is conceptualised as a means to support rural people's wellbeing achievements, particularly in the collectivist closely-knit social reality in Bangladesh (Avgerou 2002; Devine *et al*. 2006).

Social embeddedness aspects can represent effectiveness of e-learning as a means of achieving wellbeing. This is because according to Heeks (2002), effectiveness of ICT4D initiatives, which include use of e-learning in pursuit of wellbeing achievement, can be evaluated through the lens of social embeddedness perspectives. It is argued that conforming to the social embeddedness aspects can ensure a contextually meaningful and desirable ICT4D initiative (Avgerou 2008). It therefore applies to e-learning as well, because e-learning for wellbeing achievement can be considered as an instance of ICT4D. To make e-learning contextually meaningful, it is imperative that adequate contextual information is integrated. This is because Heeks (1999) claims that in most cases, existing information available to be used for ICT4D initiative are not representative of the lived realities of those in situations of poverty. While integrating contextual information, it is important that initiatives around e-learning take account of existing inequalities in the society and ensure that new types of inequalities and/or power politics do not arise as a consequence.

It can be argued that social embeddedness aspects can incorporate imprints of some of the social realities faced by an individual in his/her lived reality at ground level. As a result, social embeddedness aspect can be considered as a precondition for a bottom-up approach, because this approach usually reflects on the ground level reality. Edmonds (1999) also claims a positive relationship between the bottom-up approach and social embeddedness, which he defines as a type of social situatedness. A bottom-up approach

is claimed to be an effective approach to achieve developmental goals, particularly in the case of ICT4D (Danila & Mohamed 2013; Dey & Ali 2016; Fors & Moreno 2002). In the case of developing countries, Ratan and Bailur (2007) identify that a top-down approach fails to benefit ordinary people through the utilisation of ICT. This can be argued to carry implications for e-learning as well, because e-learning experience is intimately connected to the utilisation of ICT. It is claimed that e-learning can be utilised to enhance human capabilities, which incorporates achievements of wellbeing as well, but for this, e-learning needs to be embedded in respective social and physical structures, which further shows the significance of the social embeddedness of e-learning (Oosterlaken 2011).

Therefore, while e-learning can incorporate learning through any electronic means which can aid a person achieve particular states of being or doing s/he desires, but in most cases, e-learning is adopted as a means of facilitating formal education only. Although e-learning can take place with the help of any electronic means, but in most cases high-tech ICT options such as computer and Internet are engaged. However, in developing countries, generally low-tech ICT options are embedded in respective contexts. In Bangladesh, similar approach to e-learning prevails, but not as a regular phenomenon, rather, in the form of projects of limited time period. Irrespective of the purpose of e-learning, its adoption is shaped by a few sociotechnological factors, which include inequality in access to ICT, e-readiness, technology and gender relationships and social embeddedness aspect. Social embeddedness aspect is argued to facilitate a bottom-up approach, which is advocated in order to achieve developmental goals through ICT4D (Danila & Mohamed 2013; Dey & Ali 2016; Fors & Moreno 2002), and thereby through e-learning, when it is conceptualised as a means of wellbeing.

2.7. Conclusion

This chapter shows that while a wealth of literature exists on wellbeing, e-learning, and poverty, knowledge around the impact of e-learning on wellbeing achievement for those living in situations of poverty, is lacking. Existing literatures on e-learning conceptualise it mostly around its application in formal education and organisational training, and thereby associate it with those who are educated and have ICT skills. Thus, it can be argued that the existing literature I have reviewed presumes that e-learning is neither for those living in situations of poverty in the contexts of developing countries, nor for those who are not educated or do not have relevant ICT skills. This might raise

concerns, whether those in situations of poverty in rural areas are considered as passive recipients instead of active agents, which Sen (1999) and Lipton (1979) specifically warned about.

It can be argued that issues around achievement of wellbeing by means of e-learning for those who do not have ICT skills and live in situations of poverty in rural areas in developing countries, are found to be one of the least known social realities. No literature has been found that focuses specifically on Bangladesh in this regard. In addition to this significant gap in the literature, my literature review also identifies gaps on: the role of trust in e-learning, particularly in the rural realities in a developing country; the roles of local community members in assisting adoption of e-learning, particularly for those who do not have required ICT skills and access to ICT; the influence of the type of content on rural people's understanding; and the role of crowdsourcing in supporting e-learning around lives and livelihood in the contexts of developing countries. However, e-learning and existing ICT infrastructures demonstrate enhanced opportunities for both learning, and learning how to learn (Stiglitz 1999). As a result, e-learning can be considered as an effective tool to enhance the scope of informal ways of learning and sharing of knowledge, which can support inclusion of the excluded and facilitate achieving developmental outcomes (Mazzarella 2010). Therefore, it can be argued that, in principle, e-learning can address wellbeing achievements through knowledge development, leading to a person achieving the states of being or doing, she/he has reasons to value (Sen 1985).

Chapter 3
Methodology

3.1. Introduction

In my research I intend to develop an interpretive understanding of the ways e-learning is connected to the sense of wellbeing, from a ground level perspective. I adopt an interpretivist approach as I examine the meanings, those living in situations of poverty in Bangladesh attach to e-learning with regard to their sense of wellbeing. To understand how the practical framework of e-learning operates in different contexts, I used a qualitative case study approach, and selected three cases for discussion. The design of my methodology is shaped by the literature I reviewed, my philosophical worldview, my research questions and my cultural understanding of the research context.[71] Although interviews were my main approach to data collection, I also used focus group discussion (FGD) and observation to collect data during my five months of field work in Bangladesh. I transcribed and translated the audio recorded interviews and FGD sessions, from Bengali into English. In the discussion of my findings, I adopt a thematic data analysis technique in order to identify important patterns and issues. In this chapter, I will discuss my chosen methodology and its components. However, I will begin by discussing my philosophical worldview.

3.2. Philosophical worldview

The philosophical worldview can be understood as a researcher's ideologies or beliefs that then guide the researcher's actions throughout the research (Creswell 2014). I take an interpretivist approach in addressing my research inquiry. This decision is shaped not only by my research questions and the literature I reviewed, but also by my life experiences.[72] An interpretivist approach is also specifically advocated when conducting a research that engages with ICT, including e-learning (Walsham 1995). Furthermore, the capability approach framework I use to analyse my data, complements this approach (Robeyns 2002). My philosophical worldview provides insight into how those living in situations of poverty in rural Bangladesh make sense of e-learning in their respective realities, with regard to the influence of e-learning over their sense of wellbeing. The meaning of e-learning is not unique to everyone and is constructed by the respective

[71] As a Bangladeshi, I am familiar with Bengali culture and its elements. This understanding was further enriched by my previous engagements in qualitative research in the areas of development.
[72] My research questions are about 'how' instead of 'what' and 'why'. The form of my research question is coherent with an interpretivist approach.

individual. It can also vary depending on the respective context where e-learning is embedded. Therefore, understanding the context is also vital to conceptualise the respective social construction of meanings around e-learning. To develop an in-depth understanding of how e-learning might address rural people's sense of wellbeing, it is also important to understand the multiple perspectives of e-learning that can be gained by studying how rural people make sense of different practical frameworks of e-learning in different contexts. Andrew's argument (2011) that there exists no single theory around e-learning that can be applied to conceptualise e-learning in every possible context, also indicates the presumption of multiple realities around e-learning.

My interpretivist worldview is based on a relativist ontological perspective. I believe rural people's realities around e-learning are not unique and depend on their broader experiential understanding of e-learning, and on those elements which they think are related to e-learning. This ontological position aligns with a relativist perspective, which presumes that:

> "Realities exist in the form of multiple mental constructions, socially and experientially based, local and specific, dependent for their form and content on the persons who hold them." (Guba 1990, p27)

This ontological position is coherent with the nature of my research inquiry and the inherent characteristics of the research context. This is because ICT as well as e-learning demonstrate instances of social construction of the West not of the South Asian reality, let alone that of the rural Bangladesh (Fors & Moreno 2002). This argument also refutes the appropriateness of constructionism as the ontological stance for this research. Although constructionism considers social interactions through the lens of subjective meaning (Bryman 2016; Crotty 1998) which is relevant for my research inquiry but the underlying reality that e-learning is not socially constructed reflecting on the lived realities of the context of my research does weaken the legitimacy of constructionist stance.

Positivism as one of the other ontological stances promotes existence of absolute truth (Creswell 2014; Denzin & Lincoln 2008) though it is challenged because of its limitations in providing absolute truth particularly while studying human behaviours and/or actions (Phillips & Burbules 2000). Positivism also appears less appropriate to

pursue while addressing my research questions because it needs established theories to test research findings and my literature review does not find any theory that can be used in order to conceptualise e-learning as a means of wellbeing for those living in situations of poverty. The expected outcomes of addressing my research questions also do not conform to numeric measures which rather are the preferred outcome of positivism (Creswell 2014). This is because my research questions focus on 'how' instead of 'what' and 'why' that are generally focused on by the research questions of the research which fits positivism.

Transformative perspective also appears less appropriate to pursue in order to address my research questions because my research inquiry does not quest for change or reform through any action agenda which are promoted by this perspective (Creswell 2014; Neuman 2009). The aspect of e-learning as a means of wellbeing is still not established to any satisfactory level to offer scopes for suggesting any reform or change. It also does not incorporate issues around political changes. However, the people my research is concerned about and those of the researches which pursue this perspective share some similar characteristics, such as the concerned people are marginalised and live in situations of poverty (Creswell 2014). In spite of this similarity, issues around my research inquiry and those around the researches which follows this perspective are considerably different. A similar stance which emphasises reflective assessment and is conceptualised as historical realism is called critical theory perspective (Denzin & Lincoln 2008). It focuses on human empowerment or emancipation transcending structural barriers such as gender, class and race (Fay 1987; Horkheimer 1972). It emphasises on bringing changes instead of interpreting the social reality in order to understand it better which is rather the primary intention of my research inquiry because e-learning is a new phenomenon in the context of my research.

Epistemologically, my position is subjective, because I believe that to understand rural people's conceptualisation of e-learning and its role in addressing their sense of wellbeing; respective contexts and rural people's interactions with e-learning in their lived realities need to be studied. Guba (1996) also emphasises that to understand other people's reality, interactions with them are essential. In this regard, White and Drew (2011) claims that lived realities shape what the subjects being researched construct as meanings and shape how the researcher interprets those meanings which are subsequently shared as knowledge. In order to understand rural people's lived reality

through interactions with them, it is imperative to develop an understanding of the respective socio-cultural norms. In rural Bangladesh, characteristics of the socio-cultural norms are defined by the persisting collectivist and homogenous social reality along with the patriarchal and religious influences (Cain *et al*. 1979; Chowdhury 2009; Kabeer 1988; Kabeer *et al*. 2011)[73]. These sociocultural norms have considerable influence over the ways respective rural people make sense of something or over their meaning making in their lived reality. As a result a subjective epistemological stance appears appropriate in order to understand rural people's meaning making around e-learning and its contribution to their wellbeing.

Therefore, according to my philosophical worldview, in order to address my research inquiry, I need to understand the meanings rural people make around e-learning and its role in addressing their sense of wellbeing in their lived realities, in respective different contexts.

3.3. Research approach

I adopted a qualitative research approach in accordance with the nature of my research inquiry, my research questions, and my philosophical worldview. As my literature review does not evidence any research that conceptualises e-learning as a development tool that can address the wellbeing of those living in situations of poverty, my research inquiry can be considered to be investigating a new phenomenon. In order to research this new phenomenon, I emphasise the importance of understanding the complex interrelationships among related entities involved around e-learning and rural people's experiential understanding. This position is also suggested by Stake (1995), when a new phenomenon is researched. To develop an in-depth understanding, I consider how rural people think e-learning can address their sense of wellbeing in different contexts. Mason (2002, p1) specifically suggests that to address 'how things work in particular contexts,' respective research should adopt a qualitative approach. It can therefore be argued that a qualitative research approach is appropriate to address my research inquiry.

[73] Members of the family function around the gender roles at both family and society levels where women are considerably segregated and secluded usually following the traditions of *purdah* (Balk 1997; Dixon 1976; Jeffery 1979; Kabeer 1988; Amin 1995). While men usually work outside their homes, women's work is generally constrained within the home even if it is about agriculture (Dixon 1976; Momsen 2004). Persisting norms discourage women to work outside their homes or even to enjoy mobility beyond their respective homes (Amin 1995). Men take the responsibilities for activities around market while women take those around child rearing and household management and maintenance (Balk 1997). However, these roles and responsibilities vary to some degree depending upon the households, though the majority of the decision making power belong to men irrespective of the education, earning competency and social status of the respective women (Balk 1997).

While a quantitative research approach could be pursued, I find this approach to be less suitable for my research.[74] This is because a quantitative research approach generally evaluates objective theories using factors or variables that can be measured in numbers (Creswell 2014). My literature review shows that existing theories around e-learning do not fit every context appropriately, thereby making this approach inadequate (Andrews 2011). A quantitative approach looks to generalise findings whereas a qualitative approach[75] looks to conceptualise meaning making of 'social or human' issues, which better reflects what my research questions are about (Creswell 2014, p4). Some scholars argue that generally a quantitative approach considers the research independent of its context, whereas affiliation of the research with its context is considered as one of the essential components in the case of research that involves ICT and rural people's quality of life where wellbeing is a vital component (Avgerou 2008; Dey & Ali 2016; Heeks 2002; Rashid & Rahman 2009; Stewart 2007). Therefore, a qualitative research approach appears comparatively more appropriate to address my research questions.

3.4. Research Design

I use a case study research design to address my research questions. A case study can be conceived as:

> "An empirical inquiry about a contemporary phenomenon (e.g., a "case"), set within its real-world context – especially when the boundaries between phenomenon and context are not clearly evident." (Yin 2009, p18)

With ICT4D being an emerging concept in Bangladesh where e-learning in particular is a contemporary phenomenon; case study offers an appropriate way to address my research questions. As my research aims to understand how e-learning might address the wellbeing of those living in situations of poverty in rural Bangladesh, adopting a case study approach appears a suitable research design to conduct this research. This is because a case study research design also aims at developing an intimate and in-depth understanding of one or a few cases, in respective real-world contexts (Bromley 1986; Stake 1995). The development of my research questions also suggests that a case study research design is appropriate to address my research inquiry (Shavelson & Towne

[74] Quantitative research approach usually follows a deductive way of evaluating theories (Bryman 2016; Creswell, 2014) and intends to generalise its findings (Creswell 2014).
[75] Silverman (1997, p1) argues that it goes beyond generalising findings and should also be conceived relating to 'language, representation and social organisation'.

2002). My research questions (see section 1.4) are of an explanatory type, starting with 'how' - inquiring how e-learning can address a sense of wellbeing. Case study research design also deals with similar research questions (Yin 2012, 2014). Therefore, based on the nature of my research inquiry and the framing of my research questions, it can be argued that case study research design is appropriate for my research.

Although open to identifying any theoretical implications that arises out of my data analysis, my primary motivation is to develop an in-depth interpretive understanding of how e-learning might address rural people's sense of wellbeing, instead of aiming for developing a theory. I therefore do not adopt a grounded theory approach in my research and I discuss more on this in section 3.4.5.[76] I also do not consider using participatory action research design,[77] even though it can be used to conduct research that focuses on technology transfer in developing countries, and my research involves technology in Bangladesh, which is also a developing country[78] (Kemmis and McTaggart 2000, 2005; Ortiz 1991). The reason why I do not use participatory action research is that instead of trying to bring changes through action research, my primary motivation is to understand how e-learning works in rural realities, from a ground level perspective. As a new phenomenon, much less is known about how e-learning is conceptualised by rural people and how it can address wellbeing in different rural contexts in Bangladesh. Participatory action research therefore can be a suitable research design for future studies based on my research findings.

My research inquiry is interdisciplinary because it includes issues around rural people's sense of wellbeing, learning through electronic means, and respective technology options, incorporating related different areas of development and ICT. Currently, e-learning is in its infancy in Bangladesh. Even the broader umbrella of ICT4D, where e-learning is only one of its elements, is an emerging area, but is still not appropriately

[76] Grounded theory research design enables researcher to develop a theory grounded in the data generated by the views of the participants (Creswell 2014; Strauss & Corbin 1998). Researchers who adopt this research design usually investigate processes or events or activities in order to develop a theory (Strauss & Corbin 1990, 1998; Charmaz 2006; Corbin & Strauss 2007; Creswell 2014). Strauss (1987) argues that all the three aspects of inquiry – deduction, induction and verification - are utterly important for grounded theory, although some researchers mistakenly claim that grounded theory is mostly inductive.

[77] Kanhare (1980) and Tandon (1981) are referred to as the early users of this research design (Mclntyre 2008). The distinctive characteristics of this design are: i) participants participate as co-researchers; ii) community based approach is adopted to address the research issue; and iii) promotes change and/or action (Kemmis & McTaggart 2000, 2005).

[78] Bangladesh had been considered as a developing country even when I conducted my field work in 2014. However, in the World Development Indicators 2016 of the World Bank Bangladesh is no longer categorised as a developing country. World Bank has changed its approach to categorise countries in developed and developing countries (World Bank 2016).

embedded within the sociocultural realities of rural Bangladesh. These contextual realities and the nature of my research inquiry indicate that a qualitative case study approach is appropriate for my research. I did not conduct ethnography[79] as it is classically conceived, because it demands prolonged time, which I could not afford due to constraints around time[80] and funding supports[81] (Cheek 2005; Fetterman 2010). As wellbeing is a complex multidimensional concept that is intimately connected to the respective context, to conceptualise the broader perspective of how e-learning might address the wellbeing of those living in situations of poverty, a single context might not provide an in-depth understanding. It demands studying the relationship between e-learning and wellbeing in different contexts, and this led to my decision to study three different contexts. Therefore, considering the nature of my research inquiry, my research questions, and the realities I faced with regard to allocating time for my field work in Bangladesh, case study research design remains the most appropriate choice of research design to address my research questions.

3.4.1. Selection of the cases

I pursued a multiple-case research design to study how e-learning might address a sense of wellbeing in multiple contexts. While selecting the three cases for this research, I considered whether the underlying projects of the cases utilise e-learning in ways that address the wellbeing of those living in situations of poverty in rural Bangladesh. Using the publicly available information on the Internet, I listed the projects (prospective cases) that used to work targeting those living in situations of poverty and were active for more than a year at the time when I searched on the Internet, in order to ensure that my cases represent the reality in a consistent manner. From that list, I selected three cases which have some distinctive set of characteristics in terms of the practical frameworks of e-learning they pursue, the areas of knowledge they promote and the demographic characteristics of the target rural people (learners) they engage with. While selecting the cases I considered whether those incorporate e-learning with the crucially important

[79] Ethnography is originated from anthropology and sociology (Atkinson *et al.* 2001; Bryman 2016). It implies either a research design which engages researcher in the living realities of the research participants and in the contexts of the research for a prolonged period of time to conceive shared sociocultural behaviours; or the research report, outcome of that research (Bryman 2016; Creswell 2014).
[80] From the limited timeframe of the PhD programme, I could only spend five months for data collection in Bangladesh. Another factor which affected my time allocation for field work was the political unrest which took place in Bangladesh throughout 2013. The consequences of political unrest are an important issue to consider because these consequences affect usual social interactions of the ordinary rural people and the impacts of these consequences do not disappear immediately after the unrest settles.
[81] My sponsor did not provide funds for travel to Bangladesh for data collection purposes and this affected my field work time duration in Bangladesh.

issues such as health, livelihood and rights that influence wellbeing of those living in situations of poverty (Sen 1993, 1999). I considered agriculture as the livelihood option for rural people as Bangladesh is considered as an agrarian economy (Hassan & Das 2015). All the learners in these three cases live in situations of poverty but they live in different rural areas in Bangladesh.

The first case (the Cycle-Women case) promotes e-learning for rural women and it does so by engaging local rural women as the facilitators. It promotes e-learning mainly in the areas of health, agriculture and advocacy supports related to rights and entitlements. While health plays a pivotal role in achieving wellbeing for people living in situations of poverty, which Sen (1992) categorically endorses, agriculture plays a critical role as being the major livelihood option for the majority of rural people in the agrarian economic reality in Bangladesh (BBS 2010; Hassan & Das 2015). Awareness-raising around rights and entitlements and related supports are also prioritised for achieving developmental goals in Bangladesh (White 2002). Thus, this case incorporates e-learning in the areas which have substantial influence in achieving developmental outcomes in rural Bangladesh, in terms of the wellbeing of respective rural people. The second case (the Computer-Shop case) promotes e-learning in the areas of agriculture, particularly for rural male farmers. It engages local computer shops and local young male facilitators. The focus of this case is agriculture, which comprises the basis of the agrarian economy of Bangladesh, and thereby has substantial influence over the developmental outcomes in rural areas (BBS 2010; Hassan & Das 2015). The third case (the Internet-Freelancing case) promotes use of e-learning in developing skills in the areas of web programming. It does so, in order to encourage the ICT enthusiasts taking up the Internet freelancing opportunities on the online market places to earn money. The Internet based e-learning initiative of this case is open to both male and female, irrespective of their location. This case illustrates achievement of economic empowerment through web programming based Internet freelancing even living in rural areas, which can eventually support overcoming the situations of poverty.

I use a poverty map of Bangladesh to select the case locations for the first two cases because the underlying projects undertook initiatives at different regions in Bangladesh (BBS, WB & WFP 2009).[82] The poverty map of Bangladesh divides the country into different regions based on poverty headcounts and offers an overall idea about the

[82] A poverty map of Bangladesh, marked with the selected case locations, is presented in Appendix IV.

location wise distribution of different levels of poverty situations. It is useful to identify the locations where the likelihood of finding those living in situations of poverty is high. As my research inquiry involves those living in situations of poverty, I selected locations that are in the regions where poverty headcounts are categorised in the highest band (BBS, WB & WFP 2009). The third case is located at the single place where the underlying project is founded. Although the project participants of this case live in situations of poverty, the region where the case location is situated has one of the lowest poverty headcount rates in Bangladesh. The following table (Table 3.1) presents a brief profile of my three cases which are described in further detail in chapter five.

Table 3.1: Brief profile of my cases

Case	Focus of e-learning	Approach relating to demography	Location (district) and its poverty situation	Related other information
The Cycle-Women case	Health, agriculture and advocacy supports related to rights and entitlements	Gender-specific (female only)	i) One case location in Gaibandha which includes a river island ii) Poverty situation is critical and poverty headcount is 52.8% at case location in Gaibandha as per upper poverty line (BBS, WB & WFP 2009)	i) Active since 2010 ii) Institutional initiative, involving local and national level institutions iii) Case location receives inconsistent power supply iv) Local people speak in local language and they do not fully understand standard Bengali language.
The Computer-Shop case	Agriculture	Gender-specific (male only)	i) Three case locations, one in Gaibandha and two in Rangpur ii) Poverty situation is critical and poverty headcount is 51% at case location in Gaibandha and 49.7% at case location in Rangpur as per upper poverty line (BBS, WB & WFP 2009)	i) Active since 2012 ii) Institutional initiative, involving local commercial enterprise and national level institutions iii) Case locations receive inconsistent power supply iv) Local people speak in local language and they do not fully understand

(continued)

				standard Bengali language.
The Internet-Freelancing case	Web programming based Internet freelancing[83]	Mostly gender inclusive (for both male and female)	i) One case location in Kushtia ii) Poverty situation is good and poverty headcount is 3.4% at the case location in Kushtia as per upper poverty line (BBS, WB & WFP 2009)	i) Active since 2012 ii) Personal initiative but receives expert crowd [84] supports iii) Case location receives consistent power supply from nearest power station. iv) Local people use dialect but they can also fully understand standard Bengali language.

The table above shows that the Cycle-Women and the Computer-Shop cases are gender-specific in different ways. While the participants of the underlying project of the Cycle-Women case are women, those of the Computer-Shop case are men. However, the Internet-Freelancing case is gender-inclusive because both women and men benefit from this. It should also be noted that although both the Cycle-Women and the Computer-Shop cases have case locations in the district of Gaibandha, but they are located at two different areas of the district, where poverty headcounts vary only to a small degree.

3.4.2. Sampling and recruitment of respondents

My sample includes four different categories of respondents: project based respondents including the project participants and project officials; local trusted opinion leaders; related government officials; and members of knowledge communities in the areas related to ICT and development.[85] I included the members of knowledge communities in order to conceptualise the broader picture of current situation around the relationships

[83] Internet freelancing (also termed as eLancing) consists of three interlinked main elements: i) individuals or organisations which work as the demand side of microworks (small units of independent tasks that make a full work or a project); ii) individuals (sometimes small organisations as well) which work as the supply side of those microworks; and iii) websites that link these two groups (Aguinis & Lawal 2012). Internet freelancers are the individuals who supply these microworks. By Internet freelancers in this chapter, I only mean those Internet freelancers who are experts in web programming. However, Internet freelancing can include quite a long range of other expertise. In this chapter by Internet freelancing I mean Internet freelancing on web programming.

[84] Members of online communities who are expert in Internet freelancing

[85] Local high-school teachers are considered as the local trusted opinion leaders by the project participants.

between e-learning and wellbeing in rural Bangladesh. Although my research is concerned about developing the ground level understanding of the relationships between e-learning and wellbeing of those living in situations of poverty, the views of the members of knowledge communities around it can help to identify whether there exists any gap between the ways the relationships are conceptualised.

I used a snowball sampling approach to identify and recruit the project participants of the Cycle-Women and the Computer-Shop cases, and the respective local trusted opinion leaders. Snowball sampling is particularly advised to conduct qualitative research when it is concerned with understanding any process in the social world (Arber 1993; Willis 2006). For the Internet-Freelancing case, I did not use this sampling method and instead I used purposive sampling because all the project participants were staying together in the same building. I used purposive sampling to identify and recruit those project participants who lived in situations of poverty. I had to do this because although the underlying project of the Internet-Freelancing case was designed targeting those living in situations of poverty, project participants were not necessarily engaged based on their poverty situation. I also used purposive sampling to identify and recruit project officials, government officials and members of knowledge communities based on their relevancy and reputation. With the exception of the local opinion leaders, who I could contact without requiring any appointment, my professional and personal networks helped me to arrange contacts with project officials, government officials and members of knowledge communities.[86]

I recruited ninety-eight project participants, nineteen project officials, four local trusted opinion leaders, three government officials, and eighteen members of knowledge communities.[87] With regard to recruiting project participants, in the first instance I contacted the offices of the underlying projects to get initial contacts of the respective project participants to pursue snowball sampling. While I selected project officials based on their relevancy to my research inquiry, I selected those of the project participants who live from hand to mouth, and who either does not own any land

[86] I have been involved in teaching (as a lecturer at University of Dhaka, but currently under study leave to pursue my PhD) and research, which helped me building a network of academics, professionals, researchers and other intellectuals.

[87] Appendix V categorically shows my respondents I selected for my case study design, and Appendix VI presents detailed information about my respondents.

property or owns (or her/his family owns[88]) any land less than 0.05 acre[89]. I considered these overall economic conditions and land ownership criteria because other information, such as their daily calorie intake and cost of basic needs, which are used to evaluate poverty in Bangladesh (see section 2.2.2), were not available. Generally, rural people conceptualise poverty in terms of land ownership and it is also considered by scholars as one of the criteria to conceptualise poverty in rural Bangladesh (Barkat 2004; Borhan 2003). Another reason was that the underlying projects of the respective cases did not follow any specific measures to identify the poverty situations of their project participants. With regard to recruiting members of knowledge communities, I considered their recognised expertise in the areas related to e-learning and wellbeing of those living in situations of poverty in rural Bangladesh. The areas of expertise included agriculture, development studies, ICT, education, policy, microfinance, gender, women entrepreneurship, community empowerment and economics.[90]

I used email correspondence and telephone conversations to recruit my respondents. In the recruitment of project officials, government officials, and members of knowledge communities, I used my professional identity along with my identity as the researcher in order to facilitate the recruitment process. This approach helped me with managing faster recruitment particularly in the case of recruiting internationally reputed experts amidst their busy schedule. Without utilising my professional identity[91], it would not have been possible for me to recruit all my respondents within the five months[92] limited time period for data collection in Bangladesh. However, while recruiting the project participants, I did not share my professional identity as a university teacher. This is because rural people do not always share their natural responses while talking to someone non-local whom they hold in a position of respect. They consider the teacher as one of the most respectable people and believe that they should not speak their minds, with regard to their distresses, in front of the teachers who are not local. They consider doing these in front of a non-local teacher as disgraceful and discourteous. I come to know about this behavioural pattern of rural people from previous research in

[88] I take account of the common practice of joint family in the collectivist society in rural Bangladesh (Amin 1998; Deci & Ryan 2008; Devine, Camfield & Gough 2008; Islam 1981; Todaro & Smith 2009)
[89] It is a unit of area which equals to 4840 square yards. This 0.05-acre size of land is used as a measurement to identify those living in situations of poverty (World Bank 2008; BBS 2010). In percentage measures the total percentage of landless rural people and that of rural people who own land of size less than 0.05 acre are close to the poverty head count figures in percentage in Gaibandha and Rangpur (BBS 2010).
[90] See Appendix VI
[91] It is a cultural trait of Bangladeshi people that they respect and trust the teacher.
[92] Starting from 8th January 2014 till 10th of June 2014.

Gaibandha and Rangpur. The particular approach I adopted around sharing my identity helped me with balancing the influences of being both an insider and outsider at the same time.

3.4.3. Data collection methods

Interviews are my main data collection method, though I also used FGD and observation techniques. These are endorsed as appropriate data collection methods or techniques for case study research design (Bryman 2016; Hagan 1993; Yin 1994). I conducted sixty-two interviews and thirteen FGD sessions[93]. Throughout my data collection period, observation worked as both a supplementary data collection method as well as an inherent support for some of the interviews and FGD sessions. This is because observation techniques helped me to explore the context, and to better understand local norms and practices. Through this, I could familiarise myself with those norms and practices, which helped to build rapport with my respondents before approaching them for interviews and FGD sessions.[94] My month long stay at the locations of each of the three cases, offered me with adequate time to utilise this observation technique.

3.4.3.1. Observation

I used observation as a supplementary data collection method, which can be considered as simple observation because I did not intend to change what I observed (Bryman 2016). It can be located between semi-structured and unstructured observation, because I did not use any explicit written observation schedule,[95] comprising of specific rules for observation and recording the findings (Bryman 2016). However, I considered specific accounts of the issues around my research inquiry while observing the project participants, their direct and/or indirect interactions with ICT and with their contexts. As a result, I could integrate my observational findings with the findings from interviews and FGD sessions because all these methods provided me with a consistent form of findings, in terms of themes. While my observations were not strictly structured, I pursued a set of clear objectives, which Bryman (2016) considers essential criteria for developing an observation schedule. My focused objectives were around the following inquiries:

[93] See Appendix VII
[94] I was careful about not developing any friendship with my respondents, which conforms to the advocated ethical standard (Lichtman 2009).
[95] Observation schedule refers to a guideline, comprising a set of rules about what to observe, and directions about how to record observation findings (Bryman 2016).

- How is ICT integrated in the everyday life of the project participants?
- How is e-learning situated in the everyday activities of the project participants?
- What do ICT and e-learning mean to the project participants?

The above objectives were less appropriate for the Internet-Freelancing case, because I could only observe the project participants at the case location, but not within their own contexts, making those observational aims less relevant.

As advocated by Spradley (1979), I adopted three different measures to record data from my observations: taking on spot written or audio recorded short notes; writing detailed notes on issues and ideas related to the day's data collection, after finishing the day's work; and maintaining a working document with notes and related interpretations.[96] However, I avoided taking instantaneous on spot notes in front of the project participants, because they usually do not feel comfortable with it. I used a research diary to record findings of my observations and related notes. Sometimes I also used my audio recorder to record my audio descriptions of some of my observational findings. I transcribed those later and translated into English to ensure compatibility with my other data for integration purposes. I also used my mobile phone to write notes and thoughts around my observational findings, when I did not have any paper with me to write on. Afterwards, I copied those notes to my research diary. I did not use any photography involving any of my respondents, in order to comply with the ethical guidelines of my university. However, to capture some of the significant observational findings, I took some contextual photographs, which I was allowed to.

The process of observation continued throughout my data collection period. I observed project participants at their homes and work places; at public gathering places, such as markets, shops, and tea stalls; on the road; in the field; and at designated places where ICT services are provided by the underlying projects of my cases.[97] I did not pursue participant observation. However, as I used both interview and observation methods for a considerable period of time (about a month) at each of the case locations, this mixed approach can be considered to serve some of the purposes of participant observations to a certain degree (Blaikie 2010). In this respect, observation worked in a complementary manner, which helped me to conceptualise the full picture of the scenario by enabling me to correlate interview findings with the lived realities of the respective interviewees

[96] See Kirk and Miller (1986) for a discussion on recording of provisional interpretations on data coming from observation.
[97] A tea stall is the most popular meeting place for rural males.

and their respective contexts. I found that in the given complex sociocultural realities and practicalities in rural Bangladesh, using interviews and observations together can help to conceptualise a phenomenon in the social world that either one might not do alone.

3.4.3.2. Interviews

I used interviews as my main method because in case of qualitative research it can help getting a range of related information (Kvale 1996; Willis 2006). In total, I conducted sixty-two interviews comprising of eighteen in-depth interviews[98] and forty-four semi-structured interviews[99] (see Table 3.2 below). I preferred these two interviewing methods as they can offer my interviewees more control of, and freedom in, the respective interview sessions when compared to what a structured interviewing approach can offer (Mason 2002). I used three sets of interview guides comprising of lists of related questions around my research inquiry. The three sets of interview guides were used to interview project participants[100], project officials[101] and other respondents[102], respectively. I developed the interview guides by identifying the issues and topics related to my research inquiry that were relevant for the respective respondents. This can be considered as a thematising stage, because I developed the lists of related questions around those issues and topics (Kvale 1996). I also developed a consent form[103] to record permissions of my respondents, and a research information sheet[104] to present a brief description about my research. I translated the consent form into Bengali[105] for the convenience of the project participants, because the majority of the rural people cannot read and/or understand English.

Table 3.2: Interview profile

Interview type	Number of interviewee	Interviewee category
In-depth	18	Project participants
Semi-structured	44	Government officials, local opinion leaders, project officials, members of knowledge communities

[98] In-depth interviews are conducted in order to develop in-depth understanding of any particular experience of the interviewee and his/her reflections on that. It is used to understand interviewee's meaning around the topic of discussion and sometimes may take multiple sessions.
[99] In a semi-structured interview, a list of key questions is used to guide the interview but it also offers scopes to both interviewer and interviewee to include related new idea or question in the discussion.
[100] See Appendix VIII
[101] See Appendix IX
[102] See Appendix X
[103] See Appendix XI
[104] See Appendix XII
[105] See Appendix XIII

I followed the preferences of my respondents with regard to selecting a place and time for the interviews. Apart from the project participants, all other respondents preferred to be interviewed in the formal atmosphere of their respective work places. Project participants preferred informal atmospheres for the interview sessions. I was always careful not to lead the interviewees with questions because that is argued to weaken the interview findings (Bryman 2016). I used an in-depth interviewing approach to interview the project participants. Among the eighteen in-depth interviews, thirteen were in multiple sessions on different days, because I had to adapt to the available free time of the respective project participants. My month long stay helped me to arrange multiple sessions and match with their preferred time and place for the multiple sessions. An in-depth interviewing approach was useful in getting rich data to conceptualise project participants' interpretations and meaning making around my research inquiry (Blaikie 2010). I used a semi-structured interviewing approach while interviewing other respondents. I used particular interviewing approaches according to the preference of the respective respondent. I maintained this flexibility in my interviewing approach to ensure that each interviewee's choice was met, as suggested by scholars on research methodology (Kvale 1996; Willis 2006).

I started my interviewing sessions by introducing myself along with describing my research and research questions. I used simple and locally meaningful words to enhance the respondents' understanding. I also informed respondents about their rights with regard to their involvements as respondents and collected their informed consents. I recorded all the interview sessions using an audio recorder with permissions from my respondents. The average time duration of an interview session was around 45 minutes. However, with regard to interviewing the project participants in multiple sessions, the total time for each of those multiple session interview was longer because I had to repeat some of the information on my research at the beginning of every new session with the same project participant. I had to spend a comparatively longer time while interviewing the project participants than I had to do with the other respondents, because they demanded more details on my research, its objectives and research questions. Along with providing adequate details on my research, I also listened to them patiently; this is considered as a desired trait in a researcher doing qualitative case study research (Yin 2014).

3.4.3.3. Focus group discussion (FGD)

I used FGD as a distinct method on its full capacity, instead of as a supplementary source of data.[106] This approach offered me richer insights through the social interactions among the project participants, because amidst possible contrary views they could become more aware of their own views and ideas and could reflect on those better, when they were more confident (Berg 1995; Morgan 2000; Stewart *et al*. 2007). As a result, I could expect comparatively consistent information from FGD sessions (Bryman 2016). Sometimes, I had to conduct FGD, instead of conducting interviews, as some project participants could not afford free time for personal interviews, but were keen to share their views with some of the other project participants in a group at their workplace, during their break time. Every time I organised any FGD session, I invited more project participants than I required. I followed this approach for all thirteen FGD sessions, in order to manage the possible 'no-shows' on the day of FGD session; and this approach is also validated by scholars such as Wilkinson (1999, p188).

I scheduled the FGD sessions according to the preferences of the respective project participants, with regard to place and time. To conduct a FGD session, I followed similar procedures used during the interviews. During the FGD sessions, I used a topic guide[107] I developed based on the interview guide for the project participants. The questions in the interview guide provided me with topics to discuss in the FGD sessions. I played the role of the facilitator for all the FGD sessions and was alert to ensure that all the project participants had about equal scope to share their views. To break the initial silence and engage the project participants into the discussion, I would start with a question about what all of the attendees would prefer to talk about. In most cases the initial question was – how many of you use a mobile phone? This question engaged all the attendees in the FGD session and motivated them to respond to the topics I raised from my topic guide. I recorded FGD sessions using an audio recorder. The duration of each FGD session varied from an hour to around three hours depending upon the total number of project participants and the length of their free time. The average size of the groups in terms of the number of project participants was eight. In spite of the variations in group size, FGD sessions altogether provided me with joint constructions of meanings around my research inquiry.

[106] FGD is also called group interviews (Kvale 1996) though some scholars such as Frey and Fontana (1989), Morgan (1993) and Khan and Manderson (1992) claim that they are not the same. Kitzinger and Barbour (1999, p20) defines it as follows: "any group discussion may be called a focus group as long as the researcher is actively encouraging of, and attentive to, the group interaction".

[107] See Appendix XIV

3.4.3.4. Integrating methods and resolving challenges in the field

Although I used three data collection methods in my research, they are ontologically and epistemologically integrated in a coherent manner, both at the level of data collection and data analysis. The legitimacy of arguments based on research data is influenced by this integration, when more than one method is adopted for data collection (Mason 2002). At data collection level, I used similar sets of questions for semi-structured interviews and FGD sessions with project participants. These are, thereby, ontologically and epistemologically coherent. Although I used three different sets of questions to interview project participants, project officials and other respondents respectively, all of these questions are intimately connected to my research inquiry in a coherent manner. This is achieved by engaging the focuses from respective different angles, on e-learning and the sense of wellbeing for those living in situations of poverty in rural Bangladesh. Therefore, it can be argued that although I used different sets of questions, data collected through these sets of questions are coherent in terms of ontological and epistemological stances. All three methods provide me with findings in the form of themes and offer me a convenient space to integrate the findings.

While integration of data, collected through these three methods, was not challenging in itself, I faced two obstacles when applying these methods during my field work. It is important to acknowledge those challenges, as an awareness of those might be useful for future research. Firstly, the commute to the river island in the Gaibandha district proved challenging due to the existing poor transportation system. I had to wade through the river in the knee-high water to get on the boat in order to meet my project participants living on the island. It was safe for me to do because I know how to swim. Adapting to that situation was important, as otherwise the islander project participants would have considered me as a 'foreigner' and/or stranger, and would have controlled their natural responses while interacting with me.[108] Secondly, it was challenging to meet one of my female project participants in Gaibandha, due to the conservative sociocultural norm, which discourages women to interact with any male outsider. To overcome this challenge, I had to develop a rapport with respective local people to develop my acceptance among them. This rapport helped me to gain their confidence and trust in me and eventually I could meet that female project participant and interview her, with the help of the respective local people. In order to build rapport with the

[108] By the word 'foreigner', they do not only mean anyone with foreign nationality, but anyone who they do not know as a local, who is not capable of behaving the way ordinary local people do and who cannot talk in local language.

project participants, I also followed the clothing patterns of respective local male of my age. The most effective factor which helped me to build rapport with the project participants and respective local people was that I could speak in their local languages, which developed confidence about me in their minds.[109] Therefore, it can be argued that getting accustomed to rural people's lived realities and incorporating the local sociocultural values in my approach helped me to overcome the challenges I faced in the field, while applying my data collection methods.

3.4.4. Transcription and data management

Except the observational findings, which are in written format, data from interviews and FGD sessions are all in the form of audio recordings. I transcribed all those audio recordings and translated them into English from Bengali, simultaneously. Transcription offered me several benefits: I was not reliant on my memory of the interaction, a thorough analysis of the data became easier, and it ensured open access to the data for subsequent research (Heritage 1984). I transcribed and translated all my data before leaving Bangladesh, in order to be able to get my translations checked by an expert in linguistics. One of my colleagues, Professor Rahman from the University of Dhaka, checked the quality and consistency of my translation. He listened to the audio recordings to check the quality of translation, but without knowing the identities of my respondents, for ethical reasons. After transcription and translation, all my research data was in a coherent written digital format.

I designed my data management plan according to the guidelines provided by my university and Research Councils UK (GRIP 2013; RCUK 2011). To ensure protection of my data,[110] I preserved all the digital data files (text, pictures and audio recordings) in two different storage media – password protected personal laptop and password protected online storage provided by my university.[111] Each of the digital files was also saved with individual file specific password protection. I preserved all digital data files in read-only mode to enhance data integrity and to prevent accidental modification.[112]

[109] I know several local languages used in different areas in Bangladesh, which include the local languages of these case locations.
[110] Protection against data loss, due to accidental deletion, virus infection, software and hardware malfunctioning, hacking and other catastrophic events like fire or rain and also facilitate consistent data retention (Van den Eynden *et al.* 2011; GRIP 2013).
[111] It is called Google Drive. It is an online file storage facility of five gigabyte space, offered with each email account maintained by Google. The storage I use is offered by Google but through the University of Sheffield.
[112] A read-only is a file feature and in this mode, the file cannot be modified and saved after modification.

According to my data disposal plan, I will shred hard copies of data after completing my research report, in order to ensure data confidentiality. All the costs for my data management are covered by my research sponsor, the GoB. I will submit the final research report to my sponsor to conform to the principle of open access as advised in the case of publicly-funded researches (RCUK 2011; OECD 2007).

3.4.5. Data analysis

Considering the nature of my research inquiry, questions and approach, I used a thematic data analysis technique (Stake 1995). Instead of narrative analysis, I used thematic analysis, because my research intends to conceive a phenomenon through the experiences or social interactions of the interviewees, whereas narrative analysis is mostly concerned with drawing out stories instead of focusing on experiences of the interviewees (Chase 2011). I did not use a grounded theory approach, because that is typically used to investigate events or activities in order to develop a theory (Strauss & Corbin 1990, 1998; Charmaz 2006; Corbin & Strauss 2007; Creswell 2014). I did not investigate any event or activities to develop theory, but rather investigated the meanings that are constructed by those living in situations of poverty around e-learning and the ways it might address their sense of wellbeing. Thematic analysis provided me with patterns in my data that are important to conceive the phenomenon my research is concerned about. The outcomes of theme based analyses can also be considered more convenient for government and/or policy makers to conceptualise my research findings and to reflect on those, when compared to the outcomes of a narrative analysis or a grounded theory approach.

My thematic data analysis technique followed the approach suggested by Braun and Clarke (2006). There were five steps involved in my thematic analysis: familiarising myself with data, developing codes, identifying themes, reviewing the identified themes, and then writing the analysis part of my research report.[113] I could provide adequate efforts in familiarising myself with my research data, because I collected data through field work and transcribed and translated those by myself. I followed an inductive coding approach by not framing my codes based on any particular theory (Joffe & Yardley 2004). I pursued a similar inductive approach in identifying themes. I also reviewed the initially identified themes for consistency. After identifying the themes, I

[113] Developing codes refer to categorising data considering what it means, or, what it is about, or, its implications (Lofland & Lofland 1995).

used theories to ground the related interpretations and arguments, in order to reach a structured understanding of the phenomenon. My analysis is framed mostly on Sen's (1985) capability approach framework as it is a broad, flexible and pluralistic theoretical framework which is open to accommodate other theories and can be adapted to fit particular research contexts (Law & Widdows 2008). Even Sen (1979) himself claims that the aspects of capability approach depend on the respective cultures where it is applied, which are different at different places. However, based on the nature of my themes, I also used theories around the sociological framework of trust. I must mention here that these five steps involved in my thematic analysis, were not followed in a linear manner rather in a recursive way, as and when it was felt necessary. The final step was writing the analysis part of the research report after finalising the themes.

I did not use any software for my data analysis, though I received training on how to use related software to organise my qualitative data for analysis. I did not use it because I found the processes involved mentally distracting for me, with regard to contemplating on my data in a holistic manner. Instead of using the software I preferred to use written notes, colour coding techniques and mind mapping, to aid my data analysis. Some experts are also sceptical with regard to the use of software for qualitative data analysis, arguing that sometimes use of software can alter representation of the reality by introducing a reductionist tradition (Coffey *et al*. 1996). The units of my analysis were the themes I derived through integrating my data from interviews, FGD sessions and observations. I could integrate data in a coherent manner at analysis level because, although I used different data collection methods and recruited different categories of respondents, the focus of discussion was my research inquiry, though from varied angles of relevancy. For instance, project participants shared their views from their direct experience of learning by means of e-learning, whereas project officials shared their views from a service provider point of view, and government officials, local opinion leaders and members of knowledge communities shared their views based on their ideas or experiences around e-learning and its possible roles in addressing the wellbeing of those living in situations of poverty in rural Bangladesh. Thus, my thematic data analysis technique can be argued to have the potential to develop coherent arguments based on my data.

3.5. Ethical considerations

I considered ethical issues seriously throughout my research process and followed related guidelines provided by the British Sociological Association (BSA) and my university.[114]

I anonymised all the respondents and local institutions involved in the underlying projects of my cases, so that my respondents cannot be identified by their names or affiliations. While anonymising, I used names that are common in Bangladesh and are representative of the demographic characteristics of my research context. For instance, in Bangladesh the gender identity and religious belief of a person can be identified by the name of that person; therefore, I used names reflecting on the gender identity and religious belief of the respective respondent. I followed this approach in order to ensure the names become representative of the existing demographic realities prevailing in my research context. This anonymisation approach ensures that respondents will not be affected by sharing their views or by participating in my research voluntarily. It also ensures the privacy of my respondents.

I sought to ensure that my respondents' participation in my research did the least harm to them, was voluntary, did not incur monetary cost for them, and that their privacy was well protected. I achieved this through having an open conversation with them about their consent, and by fitting into their daily life by going to their home or workplace or wherever they preferred to give me time for interviews or FGD sessions. They did not have to spend any money on travelling to contribute to my research. I also ensured that they did not lose any work hours because of their contribution to my research. I took every effort to save their time because, as Gino and Mogilner (2014) claim, I also take the view that the influence of saving time can overshadow the influence of most other incentives, such as money given as compensation, on the ethical behaviour of the respondents. Stewart and Shamdasani (2014) also claim that offering incentive to the respondent depends upon the respective respondents and their contexts. Some scholars also argue that incentives also impose coercion, particularly on the respondents living in situations of poverty; and those who are at financially disadvantageous positions might

[114] I have already discussed a few measures I undertook to conform to the guidelines around maintaining a good ethical standard in research. These are around developing rapport with the respondents (see section 3.4.3), taking pictures (see section 3.4.3.1) and sharing respondents' identification information (see section 3.4.4).

be comparatively more vulnerable to this coercion (Baron *et al*. 2002; Boddy *et al*. 2010).

I also took adequate measures to address the safety and security issues of my respondents and myself. While meeting my respondents, I prioritised their preferences around the time and place and also took every possible account of their convenience and safety. I did not access any of my respondents at the case locations after sunset because of security reasons and to avoid interfering in their personal family time. However, I had to access five members of knowledge communities at their work places in Dhaka at night, because they found it suitable for them to manage time. While this night time appointment in the capital was safe for both me and my respondents, it was a different reality at the case location in Kushtia. I had to take special measures because the area is well-known for mugging at night, usually by some of the members of a few forbidden groups.[115] Before visiting the case location, I consulted with local people of this area over mobile phone and prepared myself accordingly. For the sake of safety and security, I never stayed outside the room I rented in Kushtia after sunset. The place where I stayed was safe and was situated beside the local police station. One of my friends from Kushtia also accompanied me during the nights for extra security. During my stay at all the case locations in Gaibandha, Rangpur and Kushtia, I contacted my family over my mobile phone at least twice a day as a safety measure. I contacted them every day before leaving for field work and after returning to my room. I also left contact details of local police stations at all the case locations before visiting any of those case locations.

At the beginning of every interview and FGD session, I informed all respondents that they could refuse to participate or withdraw their participation at any point of time during the interview or FGD session. None of my project participants were familiar with this practice but it offered them a sense of ownership of their interviews and FGD sessions, which motivated them in sharing their views. This declaration also offered them assurances that they could maintain their own priorities around work and other responsibilities.

[115] Members of these forbidden groups are followers of Maoist principles and they are infamous for attacking strangers particularly during the night time.

I planned to receive signed consents of the respondents on the consent forms, but in the case of the project participants in Gaibandha and Rangpur, I had to take alternate measures to comply with my project participants' preference. I had to record verbal consents of those project participants because they did not want to sign on any written paper. They were afraid of signing on any paper because of the abuses, exploitations and fraudulent activities they have experienced or have heard about from others, which were initiated by signing on some sorts of documents. Throughout my field work, I remained sensitive and responsive to accommodate respondents' expectations and respective sociocultural values. While meeting the respondents other than the project participants, I used my professional identity in Bangladesh, beyond my identity of a researcher.[116] I adopted this approach in order to manage the disparities of power and status between me and my respondents, as well as to expedite organising the interview schedules. However, while meeting my respondents, I had to take measures to comply with the patriarchal rural reality and situated socio-cultural norms and values.

In the conservative social reality of rural Bangladesh (Chowdhury 2009; Kabeer 1988; Kabeer *et al*. 2011), meeting female project participants sometimes appears challenging for a male interviewer. This is why I had to manage interviewer interviewee relationship with regard to gender in a contextually sensitive manner. While interviewing male project participants was not challenged by any means in this respect, I could not interview one female participant in a straightforward manner which I could in case of the other male and even female project participants. I could manage interviewing the female project participant with her voluntary consent, by means of building rapport with her neighbours and the local people in that respective village who helped her developing notions of trust and confidence in me. I used to socialise at the nearby local tea stall[117] which was the most popular place for socialisation among the local men and it worked as a gateway for me to get access to them. My skills in respective local languages and wearing of dress that respective local male of my age would wear helped me to develop rapport with the project participants and respective local people. My month long stay at the case locations offered the project participants and respective local people with confidence regarding building a comfort zone in developing rapport with me. I was sensibly responsive to the local socio-cultural norms and values which also supported

[116] I am a lecturer at University of Dhaka, in Bangladesh (currently under study leave for doing PhD), where teaching is considered as an esteemed profession and teachers have supreme social acceptance among people of all classes.
[117] A shop that sells tea and snacks and usually have a television to attract customers most of who are men.

me with managing the interviewer interviewee relationship particularly with regard to gender.

All my approaches mentioned above facilitated maintaining a sound ethical standard in my research with regard to the established best practices and at the same time incorporating local norms and values (BSA 2002; GRIP 2013).

3.6. My reflections

While I took every possible measure to strengthen my methodological approach, limitations are impossible to avoid fully. Context dependency is one of the major limitations of my research findings which Patton (1999) also identifies as one of the common limitations of qualitative research. My research findings are specific to the context of my research and represent only the views of the interviewees I selected for my research. Another limitation can be my assumption that interviews can help me understand factual experiences of my interviewees, which Flick (2009) also identifies as a limitation of qualitative research that uses interview method. However, in my data analysis, I found repetitions of findings which can be argued to imply data saturation, signifying the validity of my arguments.

Along with acknowledging the limitations of my methodology, I also intend to remark on the validity[118], reliability[119] and generalisation[120] aspects of it.[121] Among the different factors that influence various aspects of validity, my position and my approach towards positionality in terms of insider-outsider aspects, and my point of views or perspectives shared through my data analysis are two of the key factors that can considerably influence validity of my methodology. While cultural belongingness through my Bangladeshi ethnicity positions me as an insider, the fact that I am not local to the case locations makes me an outsider to some degree to the respective project participants. These turned me into a 'partial insider' (Sherif 2001, p438). I took measures to maintain

[118] The generic notions of validity implicate that research should reflect on integrity while deriving and/or claiming its findings (Bryman 2016).

[119] Reliability implicates the extent of 'consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions' (Hammersley 1992, p67). Some experts (Hammersley & Atkinson 1983; Silverman 1993) argue that reliability can be achieved by maintaining the quality of data and ensuring respective respondents' access to the processes until the final report is produced.

[120] Generalisation implies the extent to which findings of a research can be utilised to study other similar cases.

[121] In Appendix XV, I provide an account of the characteristics of my case study design incorporating four different types of assessment measures advocated by Yin (1998) - construct validity, internal validity, external validity and reliability.

a less biased influence of the insider-outsider dichotomy. For instance, during my stay at the case locations, I did not stay with any of the project participants' families in order to have a mental space detached from influences of the project participants' realities. This helped me to concentrate on critically examining my approach towards data collection and interpretation of data, to enable me to maintain my analytical distance. I was particularly aware of the need to check whether any of my preconceptions or ideas overshadowed the reality of the case locations. These initiatives helped me with making less biased judgements in data analysis, through understanding and interpreting data from a realistically attainable neutral position but at the same time with an understanding of the insider's perspectives. While some of the reflexive accounts of my research are evident in my choices of research approach, philosophical worldview, and respective methodological approaches, a balance between the insider and outsider perspectives helped me to manage reflexivity throughout my descriptions and analysis of data, in a less biased manner.[122] In order to minimise the influence of my own point of view, I studied multiple cases and incorporated multiple points of view in varying contexts.

With regard to the reliability of a case study approach, documentation of the procedures involved in the methodology is considered as an effective practice (Yin 2009). In this chapter, particularly in sections 3.4 and 3.5, I documented the different procedures I pursued as part of my methodology. To ensure reliability, I repeatedly checked the transcripts, made frequent comparisons between my data and codes, and maintained written explanations on codes to facilitate checking against any shift in the intended meanings. Gibbs (2007) also argues that these steps can support maintaining reliability in qualitative case studies research.

Although two of my cases focus on e-learning in the areas of agriculture in an attempt to promote a sense of wellbeing, this commonality is not an outcome of intentional case selection in order to achieve generalisability. I did not design my research aiming towards any theoretical generalisation as the end result, but I remained open to discover any kind of generalisation if that came through my data analysis. For case study research, Yin (2009) argues in favour of analytic generalisation instead of statistical generalisation. Mitchell (1983) on the other hand emphasises generalisation of cases in

[122] Mauthner and Doucet (2003) provide with a detailed discussion on different reflexive accounts and issues around reflexivity in qualitative data analysis.

terms of underlying theoretical propositions instead of its applicability in other contexts and/or to a broader population. I aimed at developing a summary of interpretations and arguments of my case study research, which according to Stake (1995) can be considered as propositional generalisation.

3.7. Conclusion

My qualitative case study research design is coherent with my interpretivist philosophical worldview. Studying three cases offered me with opportunities to understand the relationships between e-learning and a sense of wellbeing of those living in situations of poverty, in different contexts. The cases also have diversity in terms of their areas of focus and characteristics of their respective project participants. The combination of observations, sixty-two interviews and thirteen FGD sessions also provided substantial data to support the development of a thick description of the ground level view of how e-learning might address wellbeing. Although measures were taken to check against or minimise methodological limitations, systematic limitations of conducting a standalone interdisciplinary research, particularly around limited capacities of an individual to transcribe and analyse data, remains inherent. However, considering the nature of research inquiry, my philosophical stance and characteristics as the researcher, and the related literature I reviewed, my methodology can be argued appropriate to address my research questions, but in a context specific manner. This research design is coherent with identifying any theoretical propositional generalisation out of the interpretations of my data and my arguments.

Chapter 4
Research context

4.1. Introduction

This chapter discusses the context of my cases with regard to e-learning, rural people's sense of wellbeing and related issues. The context is looked at in terms of ICT policy and related infrastructure, sociocultural realities facing the rural people at my case locations, physical environmental characteristics, and rural people's use of ICT.

In Bangladesh, the development of most of the policies around ICT is based on the government's 'Digital Bangladesh by 2021' policy that seeks to ensure good governance and facilitate socioeconomic development (GoB 2009a). However, the policy initiatives from the GoB have mostly been around e-government, and there also exist considerable gaps between the policy and the ground level realities (Hasan 2014). With regard to ICT infrastructure, Bangladesh is developing. There are, however, substantial rural-urban differentials and in rural areas there exist comparatively limited provisions of access to ICT. For example, in rural areas radio has limited coverage, commercial Internet services are fewer and Internet speed is lower compared to those in the cities.

In terms of the case locations, access to and ownership of different ICT options remain gendered, with women having less access to digital technology and services. These access and ownership scenarios are also shaped by the economic condition of the respective rural people. In spite of the poor economic condition, almost every household owns a mobile phone and they generally use it for making voice calls. With over 30% of these rural people living in situations of poverty, and the majority of them being farmers by profession, purchasing a computer and Internet services are not considered by them as relevant or a necessity (BBS 2011).[123] Through my observations, I found that high-schools and computer shops in the local markets are the only places where computers can be found at these locations, but typically these are not used by rural people for e-learning purposes. While rural people here do not use radio, television is popular among them and it is used mostly for entertainment purposes. My observations indicate that they learn about their lives and livelihoods mostly through informal means of learning.

[123] This figure refers to the poverty headcount based on an upper poverty line where consumption of both food and non-food items are taken into account while measuring poverty situations.

The group of experts I interviewed believe that e-learning can offer a sense of wellbeing for those living in situations of poverty in rural areas, through learning skills and best practices, and developing awareness in the areas of health, agriculture, disaster resilience, skills for income generating activities, social ills such as child marriage, and rights and entitlements. However, my understanding of the context reveals that ordinary rural people have limited understanding around ICT, particularly the Internet and computers. They do not recognise how ICT can offer them learning opportunities that can help them live a life they have reasons to value, thereby increasing their sense of wellbeing. While mobile phones and televisions are embedded in rural people's everyday lives as a source of entertainment, and as a means of remaining connected with other people; computers and the Internet are not embedded. This is largely due to issues around lack of familiarity with computer and Internet and of cost. Their economic condition and labour-intensive lifestyle also offer them limited scope to spend time, money and effort in learning the ICT skills required to adopt e-learning with the help of computer and Internet.

4.2. ICT Policy and ICT Infrastructure

The relationship between ICT policy and ICT infrastructure is intimate and both influence each other; and this impacts on what ICT options ordinary people can use in their lived reality. In Bangladesh, policy initiatives around ICT evolved in 1997.[124] Following this, a series of new policies and related regulations were introduced. This shows the dynamics between the changing reality and need for new policy and regulation. Considering ICT as a priority sector[125] to materialise the visions of 'Digital Bangladesh by 2021', GoB formulated 'National ICT Policy 2009' in the year 2009 (GoB 2009a, 2014). It aims to address poverty situations, ensure good governance and social equity by means of quality education, health care, law enforcement, and to develop climate change resilience and adaptation skills (GoB & UNDP 2010). It includes government plans to provide support and to engage more people to use ICT.

[124] The first ICT related policy initiative in 1997 was introduced to monitor the rapid growth in the telecommunication sector and to associate its contributions to the socio-economic development of the country (Hasan 2014). In 2001, the first ICT policy naming 'National ICT Policy' was approved by the GoB which was enacted in 2002 as 'ICT Policy 2002' (GoB 2002). It mostly focused on uses of ICT within different government institutions to achieve operational efficiency. In 2006, ICT Act 2006 was introduced, mainly to develop the required legislative framework to address security issues around deploying ICT in different government procedures (GoB 2006). In 2008, National ICT Policy 2008 was introduced to expand the use of ICT in the government activities in order to enhance transparency and accountability (GoB 2008).

[125] This type of sector receives higher priority from government while allocating funds and resources to implement respective initiatives.

For instance, it has devised a plan to provide financial support to young people to study ICT. To integrate women in ICT, it plans to develop e-commerce centres to help them trade their products online. However, most of these plans in the policy document are classified as long-term plans, implying that it will take a long time to cover rural areas as initially only the urban areas will be covered.

In order to enforce legal entitlements for every citizen to get public information from respective institutions, GoB also introduced 'Right to Information Act (RTI) 2009' in 2009 (Hasan 2014). While this Act can address information gaps between ordinary citizens and the public institutions, it is also important that ordinary citizens realise the value of this information. There should also be convenient setups to enable them to work on this information in order to get effective results from application of this Act. In 2009, GoB also formulated 'National Broadband Policy 2009' to facilitate ordinary people's access to Internet services through broadband connections (GoB 2009b). While this policy approach can be argued to facilitate means of Internet access in the country, it is also important to identify and address whether ensuring availability of Internet access through broadband connection, or ensuring access to an appropriate ICT device, which can be used to access the Internet, is the priority for GoB. It can be argued that initially the latter approach is more important in order to create an enabling condition for the rural people. This is because access to an ICT device is essential to adopt e-learning, even if that is to be materialised by means of shared access to ICT.

While these different policies and Acts address various issues around ICT, it is claimed that there exist gaps between these policies and related ground realities (Hasan 2014). For instance, while these policies promote adoption of mostly high-tech ICT options such as the Internet and computers, low-tech ICT options such as mobile phones, television and radio are considered pivotal in promoting ICT4D effectively in developing countries (Heeks 2008). This approach in policy formulation can bring adverse consequences, as placing a higher emphasis on high-tech ICT options can underestimate and overshadow the potentials of low-tech ICT options. Most importantly, it is these low-tech ICT options that are already socially embedded in the lived realities of those living in situations of poverty in rural Bangladesh. It can also eventually affect the way these low-tech ICT options are embedded and integrated into rural realities, creating another dimension of exclusion until the rural people catch up with adopting high-tech options. The decline in radio sales in the local market at the case locations can

be considered one such consequence, which I discuss in the following case context section. In spite of these probable consequences, with regard to ICT policy framework, the overall situation in Bangladesh has substantially improved compared to the situation in the 1990s (Hasan 2014).

Like ICT policy framework, ICT infrastructure is also claimed to have improved substantially compared to how it was in the 1990s (Hasan 2014). In Bangladesh, ICT infrastructure is mostly visible through its telecommunication systems, including the 3G technology, fibre-optic submarine communications system,[126] wired and wireless Internet services, and television and radio channels.[127] There are six mobile telecommunication operators in Bangladesh one of which is operated by the GoB.[128] The current tele-density[129] in Bangladesh is 77.28% and the telecommunication system plays a pivotal role in offering access to the Internet across the country (GoB 2014).[130] However, only 4.8% of the total households in Bangladesh have access to Internet connections, and broadband Internet connections are generally used in urban areas (BBS 2015a). Therefore, the 'National Broadband Policy 2009' is only marginally relevant to rural people. There are three terrestrial television channels operated by GoB and twenty-six active satellite television channels operated by different private organisations (Rahman, A. 2016). However, despite how many channels there are, rural people prefer to pay to get cable connections, mostly to watch foreign channels. It can be argued that these free television channels do not target rural people as they do not find relevancy in the programmes the television channels broadcast. The country also has twelve state-owned radio centres covering the whole country and twelve privately owned active FM radio centres, which cover mostly the urban areas.[131] There are also fourteen privately owned active community radio (FM) centres, which cover mostly the rural and

[126] Bangladesh is a member of the South East Asia – Middle East – Western Europe 4 (SEA-ME-WE 4) system which offers fibre optic based submarine communication systems for telecommunications. This is the only submarine cable the country has.
[127] While Bangladesh Telecommunication Regulatory Commission (BTRC) controls and monitors the telecommunication sector of this country as the designated government body, the Ministry of Information itself offers similar services where television and radio are concerned. BTRC works under the ministry of posts, telecommunications and information technology.
[128] The total number of mobile phone subscribers in this country is about 131.085 million (BTRC 2016). There are twelve licensed organisations which operate Public Switched Telephone Network (PSTN) services or land phone services. Four of these organisations cover the whole country, seven of these cover different zones which include mostly urban and suburban areas, and one covers some of the rural areas (BTRC 2016).
[129] It implies the proportion of people who have access to telecommunication services.
[130] Majority (about 96.16%) of the Internet users access Internet generally through mobile phones (BBS 2015a; BTRC 2016).
[131] FM refers to frequency modulation technology which uses particular frequency ranges for broadcasting.

suburban areas (Rahman, A. 2016). [132] However, even with this number of radio channels, the majority of the rural people at the case locations do not own a radio. Ordinary rural people in Bangladesh also have limited access to computers, which turns e-learning by means of computer into a challenging endeavour for them.[133] In these instances, the alternative is shared access to computers to catch up with the high-tech ICT options.

Although ICT infrastructure is being improved with global changes in the ICT options, the urban-rural differentials in availability of ICT options and their use are considerably high. In the following table (Table 4.1), I present household level access scenarios to different ICT options in Bangladesh.

Table 4.1: Household wise access to different ICT options in Bangladesh (in per cent of total households)

Type	Computer	Mobile phones	Radio	Land phone	Television	Internet
Rural	1.7	85.2	13.1	1.1	33.0	2.1
Urban	16.0	94.1	15.7	8.1	79.0	11.6
Total	5.7	87.7	13.9	3.1	46.0	4.8

Source: adapted from BBS (2015a)

The table above also shows that in terms of mobile phone use, rural areas are not far behind the urban areas. However, this does not give us any indication as to how rural people use their mobile phones. In a similar way, although it is claimed that in Bangladesh 92.4% of men and 82.8% of women use mobile phones, these figures do not show the urban-rural differentials in the mobile phone usage in this respect. Furthermore, while these figures might suggest gender equity with regard to ICT, these figures of ICT usage do not take into account the underlying ICT ownership scenarios and power relationships, which substantially shape the effectiveness of ICT options, and thus tell only a partial story of the lived reality.

4.3. The case context

While ICT policy and ICT infrastructure impact on both case context and the broader social context, the case context also has some characteristics of its own. I discuss the case context with respect to the sociocultural characteristics, physical environmental

[132] Each community radio has comparatively smaller geographic coverage than other radio categories, usually an area of 17 kilometre radius.
[133] In rural areas, 1.7% households have access to computer whereas in urban areas the figure is 16%.

characteristics and the different ways respective rural people use different ICT options. While these three aspects depict the lived realities rural people experience at the case locations, the sociocultural characteristics particularly show how different social norms, practices, and cultural elements shape rural people's everyday lives and their sense of wellbeing.

Understanding these aspects can help conceptualise how e-learning needs to be embedded in their lived realities, what the problems are in this regard, and how to address those problems. The physical environmental characteristics can help conceptualise rural people's quality of life, which has links to their sense of wellbeing. Such understanding can also help develop an understanding of the rural setting in terms of the conditions related to integrating e-learning in rural areas. Understanding the ways rural people use different ICT options can help to conceptualise how they make senses of those ICT options, which can have implications for identifying appropriate ICT options in order for them to pursue e-learning.

4.3.1. Sociocultural characteristics

I describe below the sociocultural characteristics of the case context. First, I present a discussion on the sociocultural and religious context and then I discuss about the demographic characteristics, different social realities facing the rural people at the case locations, and the ways rural people pursue learning in their lived reality.

4.3.1.1. Sociocultural and religious context

Rural Bangladesh is a culturally homogenous collectivist society where the majority of the families are joint family[134] (Amin 1998; Deci & Ryan 2008; Devine, Camfield & Gough 2008; Islam 1981; Todaro & Smith 2009). Patriarchy is a persisting reality of this sociocultural context, which prevails in a way where men within the families exert power and control resources while women are comparatively powerless and depend on men. The material aspects of patriarchy continue through men's control over assets and income; while the structural aspects continue through kinship, religion and political arrangements (Cain *et al.* 1979). The consequences of these aspects sometimes come into being in the form of social ills including domestic violence against women, dowry

[134] It is a particular family structure where more than one generation live in the same household (Amin 1998).

and stigmatisation of women affecting the wellbeing of the respective women as well as the other members of the respective families (Bates *et al.* 2004).

Although historical analysis of this country back from the colonial period would place the roles of religion as a dividing factor in the society, the rural Bangladesh illustrate peaceful coexistence of different religious believers[135] showing persisting differences between the universalistic ideal of Islamic beliefs and the culture of rural Bangladesh[136] (Kabeer 1991b; Uddin 2006). The combined effects of poverty, patriarchy and religion, which Amin (1997) calls as poverty-*purdah* trap, defines most of the sociocultural lived reality in the rural Bangladesh. However, these generic characteristics of the sociocultural and religious context vary to some degrees in different rural areas. Nevertheless, the Bengali language which is the reason behind the naming of the country as Bangladesh ties these differences instilling the Bengali identity and fostering peaceful coexistence of multiple faiths in rural Bangladesh (Uddin 2006). Celebration of the Bengali new year day - an unique cultural festival which unites Bengali people of all religious faiths - is the emblem of the cultural homogeneity of this festivity loving collectivist society (Deci & Ryan 2008; Devine, Camfield & Gough 2008; Islam 1981).

Bangladesh is a country where Islamic ideologies and Bengali culture represent two different identities which are supported by the state commitments which refrained from imposing "Islamic norms of behaviour and dress" (Kabeer 1991b, p38). This appears evident at all the case locations of this research where people of all faiths have social relationships among themselves amidst their differences in religious beliefs. It is not possible to segregate these local people based on their religious identity only by looking at their behaviour or dress, except when they attend any religious festival. However, when compared to the scenarios of the case locations in Rangpur and Gaibandha, that of the case location in Kushtia appears different to some degree where it is a common scene that women are comparatively less visible at public places and the majority of them when they appear at public places wear veils which represents Islamic norm around dress but is not representative of Bengali culture. This limited visibility of the women can mostly be attributed to the Islamic ideology based conservative norm which discourages women to go outside their homes. In Bengali culture, women do not wear

[135] The majority of the rural people are Muslim. The second majority is Hindu with a few Buddhists and Christians (BBS 2015b).
[136] The commonly used term 'Bengali culture' implicates cultural norms persisting in Bangladesh and in the state of West Bengal in India (Inden & Nicholas 2004).

veils and generally married women cover their heads only when they meet strangers outside their homes. However, in case of the dress of the males at all the case locations, similar influence of the Islamic norm around dress is not visible which can be attributed to the persisting patriarchy in addition to the spirit of the Bengali culture where male generally wear *lungi*[137] and shirt irrespective of their religious identity.

The location of the Cycle-Women case carries an indication that religion appears to have different influences over the islanders than it has over the mainlanders. This can be perceived by looking at the condition of the houses of worship at respective locations. While the standard/quality of the houses of worship in the mainland is considerably better than any house in respective area, the houses of worship on the island are nothing noticeably different than the ordinary house islanders live in. It implies that islanders who encounter geographic and climatic challenges [138] on regular basis attribute comparatively lower priority to conforming to the customs around maintaining the houses of worship than the mainlander attribute in this respect. It can thus be argued that the lived sociocultural reality on the island subsides the commonly observed influences of religion over the rural people who live in the mainland.

4.3.1.2. Demographic characteristics

Demographic characteristics of the case context provide an overall idea about the local population, which can help conceptualise their professional engagements with respect to their livelihood patterns and their economic conditions. While economic conditions can indicate rural people's ability to afford particular e-learning options, their livelihood patterns can help conceptualise their probable areas of interests in learning.

All the case locations of the three cases are densely populated, with approximately three thousand people per square mile (BBS 2011). Over half the respective local people are young and below 30 years old (BBS 2015b). The majority of these rural people are farmers by profession. However, there are also fishermen, day labourers, service holders at government offices and local organisations, potters, blacksmiths and a few businessmen dealing in produce, or engaged in other small scale business such as tea stalls or seeds, fertilisers and pesticides. A number of the professionals, who are not

[137] Lungi is a traditional dress for male which looks like a skirt when it is worn but at its two ends it actually has same width. This dress can also be found in other South Asian, some African and southern Arabian Peninsula.

[138] Geographic challenges mostly correspond to the poor transportation system while the climatic challenges include floods, cyclones and river bank erosion and their respective after effects.

classified as farmers, are also engaged in agriculture either directly or indirectly. In this way, they have two sources of income: their own profession and agriculture. However, in Gaibandha and Rangpur those who depend only on agriculture for income and cannot earn enough to meet their bare subsistence are prone to the chronic poverty-led social problem called *Monga,* a seasonal food insecurity period, which starts in September and continues for about three months.[139] Agriculture is thus intimately related to the sense of wellbeing for these rural people. Their livelihood patterns also show that one of the key learning areas these rural people would be interested to invest time and effort in is agriculture.

The overall economic condition of the ordinary rural people at these case locations is influenced by their professions. In general, their economic condition is not strong enough to enable them to spend money on computers, the Internet or smart phones, as most of them struggle to meet their bare necessities. The poverty headcounts[140] in Gaibandha and Rangpur are one of the highest ones in Bangladesh though the poverty situation in Kushtia is comparatively better (BBS 2010). As a result, for most rural people, the priorities remain around ensuring subsistence and not on the Internet and computers. They are also not keen to spend time, money and effort in learning ICT skills that are required particularly to adopt Internet and computer based e-learning options. In addition to this, the levels of literacy are low at all the case locations in Kushtia, Gaibandha and Rangpur.[141] On average the rate of literacy is around 40% which has increased only marginally (around 7%) in the last decade.[142] As basic literacy is essential, to adopt e-learning as a means of learning, the low literacy rate works as a

[139] Monga is a kind of seasonal food insecurity period prevails in the greater Rangpur region, mostly the areas along Teesta and Jamuna rivers, consisting five districts Rangpur, Gaibandha, Kurigram, Nilpharmari, and Lalmonirhat. These areas are economically weaker than other regions. Greater Rangpur is a food surplus area but due to lack of industries except the tobacco industry, agriculture alone cannot provide enough employment for the existing big agriculture labour force and causes seasonal unemployment and income deficit. Mostly those who depend absolutely on the income from agriculture which is also not enough to support their expenses during the lean season (mid September to mid November) suffer from this seasonal and location specific poverty derivative (Zug 2006)

[140] Based on the lower poverty line extreme poverty estimates for Gaibandha and Rangpur are 30.1% and 30.3% respectively. The poverty estimates based on upper poverty line are 46.2% and 48% respectively (BBS 2010). However, in Kushtia poverty headcounts are 0.8% based on lower poverty line and 3.6% based on upper poverty line.

[141] Literacy is defined in different ways. BBS (2013b) follows the definition developed by UNESCO where literacy is viewed from its functional aspects: 'Literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve his or her goals, develop his or her knowledge and potentials, and participate fully in the community and wider society.' (BBS 2013b, p4)

[142] At Gaibandha, rate of literacy increased from 35.7% in 2001 to 42.8% in 2011; at Rangpur the corresponding figures are 41.91% and 48.5%, and at Kushtia these are 40.4% and 46.3% respectively (BBS 2013b).

critical barrier in order to enable rural people to pursue e-learning in a self-directed manner, particularly via the Internet, computers and mobile phones.

4.3.1.3. Social realities

I describe the social realities of the case context in terms of the status of social cohesion, role of language, approach towards education, and everyday activities of the rural people at the case locations in Gaibandha, Rangpur and Kushtia. I consider these aspects of social realities in order to understand the lived realities of respective rural people that are related to my research inquiry. I used both my observational understandings and existing literature to develop the narrative below.

4.3.1.3.1. Social cohesion

Bangladesh is considered as a closely-knit, homogeneous and collectivist[143] society (Deci & Ryan 2008; Devine, Camfield & Gough 2008; Islam 1981; Todaro & Smith 2009). The case locations reflect this view. Local people at all the case locations know one another within their communities. They enjoy gossiping and sharing their important everyday happenings with neighbours and friends. Getting community support is not difficult for the members of respective rural communities. Therefore, it can be argued that there exist opportunities for community supported e-learning, if required resources are made available and the required resource person can be found from within the respective communities.

However, in spite of the existing social cohesion, the level of community participation is not equal for all the members of the respective rural communities. Due to the persisting patriarchy and religious conservativism, women experience limited freedom compared to the men, particularly when women are required to get engaged outside their homes (Cain *et al*. 1979). These two factors also limit rural women's freedom along all the five dimensions of freedom - political freedom, economic facilities, social opportunities, transparency guarantees, and protective security - that Sen (1992, 1999) identifies as essential for the achievement of developmental outcomes and, thereby, wellbeing. Therefore, for rural women the adoption of e-learning depends on more factors than it does for men. This is particularly a reality when e-learning is conceptualised as a socially embedded means of learning.

[143] In a collectivist society people value interdependence and group obligations over individual interest and autonomy (Diener & Suh 2000).

4.3.1.3.2. Language

Language as a cultural component is not only used as a means of exchanging thoughts and communicating with others, it is also used by the local rural people at all the case locations as a symbol of locality. They think that anyone who can speak the local language is not an outsider; instead they are regarded as their community member or a neighbouring villager. They associate non-local languages, even standard Bengali language, as representing a reality outside their social-cultural contexts. Most of the local people at the case locations in Gaibandha and Rangpur do not understand the standard Bengali language fully.[144] However, at the case location in Kushtia, the local language is not considerably different from the standard Bengali language.

Language not only influences these rural people's understanding, but is also used by them as a scale to evaluate what is relevant for them. For instance, rural people at all the case locations think that most of the television programmes broadcasted by Bangladeshi television channels are not produced for them because they use standard Bengali language. There is only one programme that most of them watch on the television. It is a programme which shares different agricultural techniques and it does not use standard Bengali language.

When faced with standard Bengali or English, they turn to their children, or their neighbours' children, who study at schools or colleges, for help. They also look to them when they encounter difficulties in using their mobile phones, which generally use English as its operating language. These children work as the change agents at family level who actively assist family members using ICT, particularly mobile phones, with related skills in technology and competencies in language.

Therefore, language is a barrier when these rural people adopt e-learning with a self-directed learning approach. With the help of a resource person from within the community they can manage the barrier, which can support them with using ICT and thereby adopting e-learning.

[144] Bengali is the national language of Bangladesh that almost all inhabitants speak in. However, there are different dialects and local languages people use in different areas. People generally use a universal standard form of Bengali for official purposes throughout the country which I refer to as standard Bengali language. However, rural people in some areas of this country struggle to fully understand this standard Bengali language as they always use dialects or local languages and mostly understand those fully.

4.3.1.3.3. Everyday activities

Everyday activities of those living in situations of poverty in the case locations can be considered as representative of their lived realities. Developing ideas about their everyday activities can help to conceptualise how e-learning can be better embedded in their lived realities. It also helps conceptualising what constitute their sense of wellbeing around their everyday activities. I describe below the everyday activities of these rural people with respect to their gender identity because their everyday activities vary mostly depending upon it.

Women's everyday activities start early in the morning before the sun rises and before men's everyday activities start. They do all the cooking and household works including rearing cattle and supporting post production processing of crops. Some women of the female headed houses also work in the field independently like the male farmers do; this is in addition to the cooking and household work. Women also occasionally offer to help in the fields with their husbands or male family members. Usually their children help their fathers in the field. If they attend school, this will be after their school hours. Wearing work-clothing and putting on sandals or shoes while at work in the field are not common practices among either women or men. This affects their health issues, particularly around skin diseases and eye infections, and thereby their wellbeing. Although some women work in the field, most of them do not go to market due to the conservative sociocultural norm, which discourages women to visit public places. This implies that women and men enjoy different levels of freedom to participate in the activities outside their homes. This understanding can help develop the particular type of inclusive e-learning that can engage both women and men.

However, it is also not at all uncommon to find women running small corner shops on their own within their villages, where they are familiar figures to other members of the communities. Usually these women do not have their husbands or sons to support them running the corner shops. These women can exercise more agency compared to the other ordinary rural women. However, this agency for women comes into being through the social cost of not having husbands or sons in the persisting patriarchal society where they live in.

Unlike most of the women in the mainland, women islanders usually go to the local market freely and also work in the fields outside their homes like male farmers do. The

main reason why women can or need to work this way, is that during the daytime most of their husbands or male family members remain on the mainland for work. This lived reality faced by women islanders extends the overall picture Momsen (2004) draws around women's everyday activities within the household. It can be attributed to the physical characteristics of the place where they live in and the livelihood patterns of the respective households. However, the nights for the women islanders are less eventful than those for many of the women on the mainland. This is because women islanders cannot access television due to lack of grid power supply, but most of their peers on the mainland can. [145] They watch television during their free time at night and sometimes in the day after their midday meals. However, time-poor women in these rural areas have limited scope to afford free time beyond their everyday activities, most of which is based in their households.

Unlike most of the women, men are usually engaged in activities outside their homes. Men leave their homes in the morning to work in the fields or in the local market irrespective of the weather conditions unless there is a storm, cyclone, or flood. This is because most of them live from hand-to-mouth. Generally, when they go to work, they carry their lunch with them. However, those who live close to their workplaces may go back home on a short lunch break. Typically, after finishing work, in the evening they go to the local market or common public meeting places (such as tea stalls) for socialising. This gives men an occasion to wear better clothes and put on sandals if they have any. They enjoy tea, share their important everyday experiences, talk about local, national and even international issues, and discuss social issues. They also watch and enjoy television programmes at the tea stalls or grocery shops.[146] Most of the shops use seating arrangements to attract male customers to access free television. The rural males consider this as the most convenient and effective means of learning and updating their knowledge through their active participation in conversations, and watching television programmes in an informal atmosphere or the social milieu they profoundly like.

However, most of the male islanders can enjoy social gathering to a lesser extent because many of them need to commute to the mainland for work where they spend

[145] About 40% rural households are covered by grid-based power supply and villagers still struggle to access this limited supply due to high cost (Khandker *et al*. 2014). Islands are usually left out of the grid-based power supply.

[146] Rural people share that about a decade ago, they used to enjoy radio programmes at these places, instead of television programmes. It was very popular among them for learning purposes. However, they can no longer access radio services now because radios are not available to purchase.

most of their time and energy. A few of them can enjoy a brief socialisation at market places on the island in the evening and only till the sun sets. This is because soon after the sun sets, public places on the island become dark as they are off-grid and rely on tiny oil lamps. Islanders, mostly the men, go to the nearest mainland market places during the *haat* days (special weekly business days) to buy their necessities, which comparatively smaller markets on the island usually do not sell. [147] Some of them also go to the *haat* to sell their produces and poultry. They usually complete their trade before the sun sets because they need to return to the island before it becomes absolutely dark. Poor infrastructure and challenging geographical characteristics adversely affect everyday activities of the islanders and thereby their wellbeing.

In general, rural people's everyday activities confine them to live a labour-intensive and time-poor lifestyle. Their everyday activities are organised mostly in terms of their gender identities and respective roles in the families, which are shaped by patriarchy and conservative sociocultural norms. As a result, women have comparatively less scope to interact with people outside their homes than men have. This implies that although men and women have a shared sense of wellbeing, they might not be the same. As with their economic condition, which does not allow them to own high-tech ICT, their everyday activities also leave them with insufficient free time to let them develop the ICT skills required to adopt e-learning. Therefore, rural people's lived realities around their everyday activities have implications for shaping e-learning opportunities to become effectively socially embedded.

4.3.1.3.4. Approach towards education

Rural people's approach towards education can help conceptualise imprints of their overall motivations in favour of learning with the help of e-learning. Although less than half of the total population at the case locations in Gaibandha, Rangpur and Kushtia are literate, education for the children receives higher priority among almost all of them, than having a good meal. Even if they struggle to manage three meals a day, they are highly motivated to spend money on their children's education[148] and to send them to

[147] In rural areas a special market day (*haat*) is arranged at the usual market place once or twice a week. More traders and buyers go to market on this special market day as more customers visit market places on these days and more options and cheaper price are offered. Local farmers, fishermen and other professionals gather at an open or semi-open place with their commodities stacked within the temporary shops or sheds or even under the open sky on this special day.

[148] This approach towards children's education can also be found in other studies. For instance, a study of panel dataset by Binayak Sen also reflects similar trend (Bhide & Mehta 2003).

schools.[149] They believe that educated children bring higher social status, social esteem and better futures for the respective families, in terms of economic empowerment through income from jobs, and thereby facilitate their wellbeing. However, although GoB has been offering free education for every citizen up to 5th grade and for girls up to 12th grade, labour-intensive everyday lives of those living in situations of poverty do not always permit them to avail this free education (DeJaeghere & Wiger 2013; Ahsan & Burnip 2007).

In the case of jobs, rural people think that office jobs in the cities are better than farming in the villages, which have higher social value, and they consider education as the gateway to those jobs. To the majority of the rural parents, sending their daughters to schools[150] and colleges[151] for study purposes is mostly to enrich their bridal profiles; otherwise it is only the household management, after-harvest crop processing and cooking skills that daughters learn throughout their youth. However, daughters on the island are also taught other farming skills beyond the after-harvest crop processing skills, so that when respective male family members need to stay in the mainland for work or other purposes, they can take care of the farming tasks. A few parents send their daughters to schools as it helps them in future, to get jobs at the ready-made garments factories in the cities, which also provides an income for the respective families. Rural people correlate education only with earning social esteem, higher social status and economic empowerment through income from future jobs of their children. They believe education can enhance their wellbeing situations only in these limited ways.

Along with rural people's positive motivations in pursuing their children's education, there also exists a universal social norm in rural Bangladesh, that rural people have unconditional trust in teachers. [152] They consider teachers as the icon of ideals and high morals. Whenever they face any problem they cannot solve themselves, they turn to

[149] While this thirst for formal education by the rural people is highly appreciated by intellectuals and is declared as a positive developmental achievement (Drèze and Sen 2012); the development and agricultural experts I interviewed, put a different perspective on this issue. They argue that farmers do not want their next generations to become farmers and it is one big reason for their motivation in sending their children to schools. Chambers (1983, p76) also argues that rural people think schooling is the gateway to "upwards and away from rural life to urban opportunities and rewards". These development and agricultural experts expressed their concerns that this trend which is now pointed out as positive developmental outcome might create windows of complex problems in the development ecosystem of the agrarian Bangladesh. They further point out that exclusion of agriculture from curriculum by the government might even magnify this potential future development crisis in Bangladesh.

[150] At school, students can study up to 10th grade of education.

[151] At college, students can study 11th and higher grades of education.

[152] I consider trust, faith and confidence interchangeably. However, these are approached in different ways in the literatures of philosophy (see Seligman 1997).

their local teachers for insightful and unbiased suggestions. They believe that these local teachers have better knowledge on all aspects of their life. Expertise and high morals make teachers their opinion leaders. This opinion leadership, together with their ICT skills, make them the only local trust anchor whom they can rely on for anything that relates to learning and knowledge development. School, the workplace of their opinion leaders, are considered to be the place they can access freely whenever they want, irrespective of their social status, economic position and gender identity.

Following the discussions above, the social realities of the context of my cases show that social cohesion persists in the closely-knit social fabric of the communities in rural areas, which offers convenience for learning through sharing. However, in spite of this social cohesion, women's community participation is limited by the persisting patriarchy and religious conservativism. Language also plays a role in rural people's participation because they consider the language to understand, what is relevant for them and their lived reality. Their everyday lived reality is labour-intensive, with very limited free time to relax and engage with entertainment. Their everyday activities are shaped by a gendered division of labour, family structure and livelihood pattern and with underlying influences of patriarchy and conservative sociocultural norms. In spite of their poverty situations and struggles to ensure bare necessities for the family, most of them prioritise their children's education over a good meal, expecting social esteem, higher social status and future economic empowerment in return. However, these are the only ways they find education relevant in their social realities.

4.3.1.4. Means of learning

My observational understandings reveal that rural people at the case locations in Gaibandha, Rangpur and Kushtia conceive learning in a broader sense and as a means of developing knowledge about life and livelihood, which for most of them is agriculture. They prefer to learn from sources that are socially embedded in their locality. They usually learn about life and livelihood from family, neighbours, friends and acquaintances, trusted local experts such as local expert farmers, professionals such as agricultural officers from government institutions or NGOs, teachers, television programmes such as the ones produced by Meraz [KC2][153], and sometimes also from newspaper articles. A common practice around learning is that they first prioritise the

[153] I refer to my respondetns in this form where it shows the name and the unique respondent number in the brackets. Using this number, details of the respondent can be found in the Appendix VI.

person they learn from, and then consider what is being taught to them. A trust relationship is essential for them to accept the person as their knowledge source. Local people who could build effective transferable skills and develop knowledge through work experience and/or trainings from either GoB or any NGOs are considered as local experts by them. However, while training programmes offered by government departments and/or NGOs work as sources of specialised learning opportunities, these usually accommodate a limited number of people due to institutional capacity constraints. Sometimes rural people cannot afford attending training opportunities when they need to travel a long way at the cost of their working hours and travel expenses, both of which could rather be utilised to meet some of their necessities. It is mainly men that can manage to attend these training opportunities. Typically, women cannot attend training initiatives outside their locality, mostly due to their household work responsibilities and conservative sociocultural norm which discourages women to stay outside their homes overnight unless male family members accompany them.

Ordinary rural women do not access printed newspapers, which educated men can at the few shops that sell newspapers in the local market. The local commercial sellers of seeds, fertilisers, pesticides and insecticides have become another source of information, again mostly for men as they can freely move out their homes and visit the shops. These sellers share their product related agricultural information and related knowledge, but mostly as part of a marketing approach. However, farmers cannot learn any agricultural technique or skills from them. Nonetheless, both men and women learn agricultural skills and related techniques by watching television programmes on agriculture, particularly the ones produced by Meraz [KC2] who they trust for his effective programmes. They argue that the informal Bengali language Meraz [KC2] uses in his programmes is very effective as it does not use technical terms and standard Bengali language which they do not understand properly.[154] While television is an existing option to rural people to learn, radio is not. Radio was a convenient option for them to learn about agriculture and health, but although those programmes are still broadcasted today, they cannot find radios to buy even in the nearby central markets. While a few of them know they can listen to the radio via their mobile phone, they are not interested in pursuing that option as they find it inconvenient and complex to operate.

[154] In his programmes, Meraz uses an informal type of spoken Bengali language which is not used in urban areas but rural people can understand that. He used his experience of working with farmers since the early 1980s to develop this informal Bengali language. Television programmes usually do not use this language.

Generally rural people learn by doing, through observation and word of mouth. These means of learning help them to overcome their literacy barriers. However, when these means of learning require them to go outside their homes, then men benefit more than women do. This is because men have enhanced access to the outside world. Nonetheless, both men and women prefer to learn from within their informal surroundings, rather than by visiting professionals and/or experts at NGOs or government offices. Institutional initiatives which support adult learning or lifelong learning are very rare in these areas. With regard to institutional training opportunities, the majority of the rural people trust in government trainings more than they do in those from the NGOs. However, prefer experts from NGOs to those from government offices. This is because usually NGO experts go to them, whereas in most cases they need to visit government offices to get expert support. Ordinary rural people prefer informal means of learning when it is to help them with their lives and livelihoods, and provide them access to the quality of life they value, all of which impact on their overall sense of wellbeing.

4.3.2. Physical environmental characteristics

Like the sociocultural characteristics of the case context, the physical environmental characteristics also influence the quality of life of those living in situations of poverty at the case locations. Physical environment influences the way respective local people construct their sense of living at a particular place (Stedman 2003). It also shapes their sense of wellbeing around different available facilities and amenities they can afford. Using my observational understandings, I describe the physical environmental characteristics in terms of geographic characteristics, housing patterns and related different facilities and the transportation system. These descriptions below will depict some of the aspects of the lived realities facing them.

The case locations have tropical monsoon climate and fertile land, and so are representative of general conditions in Bangladesh. A feature of this particular climate means that rural people encounter natural disasters such as flood, cyclone, drought, and river bank erosion, which sometimes cause affected people to migrate to other places and face an uncertain future. These natural disasters substantially affect respective rural people's quality of life and thereby their sense of wellbeing. However, geographic characteristics of the case context also offer different livelihood options around agriculture, which help rural people to earn money to buy their necessities. Farmers can grow crops without much difficulty in the alluvial land. The riverine locality also offers

fishermen a means of living. However, as most of the ordinary rural people are not aware of the available technologies to make their work easier or cannot afford those, they need to live a labour-intensive lifestyle to cope with the increasing demand for income to meet their bare necessities. Because of their insolvency and labour-intensive lifestyle, they are sceptic about spending time, money and effort to learn new skills, which they do not find directly relevant to their lives and livelihood.

The dwelling places at the case locations in Gaibandha and Rangpur look like an aggregation of small farmhouses, most of which are single storied houses and stand in clusters among the arable lands. The majority of the houses are built with bamboo, straw, corrugated tin, brick, soil and clay. Only a few houses are brick-built; these carry higher social status and are usually owned by local influential people. Almost every house has cattle shed and/or poultry shed attached to it and sometimes has a stock of hay stored in the courtyard for the cattle, which altogether offers a farmhouse visual. Lack of adequate hygiene is a major health concern in these areas as rural people are not aware of good practices; rearing cattle and/or poultry at their dwelling places makes it even more challenging. Most of the houses are built on the relatively high lands so that during a flood rural people do not need to abandon their houses to take shelter somewhere on the nearby highland. Clusters of houses are usually surrounded by trees, so that cyclones can cause less harm to the houses. There also exist a few houses made of only earth, clay and straw, which get badly affected during natural disasters. These housing patterns show that rural people need to fight against natural disasters constantly, which adds further complexity to their lived realities. At the case location in Kushtia, the average housing pattern is different from the housing pattern of the majority of the houses in rural Bangladesh. This can be attributed to the comparatively better poverty situation and the area being within the city corporation.[155] Most of the houses are detached single units of brick-built one or two storied buildings. In terms of construction, these dwelling places are stronger compared to those in Gaibandha and Rangpur and therefore natural disasters cause comparatively less harm to respective rural people and their wellbeing.

Provisions for different utility services, such as power supply, indicate the quality of life at the case locations and thereby are connected to the related concerns around wellbeing.

[155] City corporation area is the central area of the respective district, where the central administrative offices are situated. As a result, situation of the utility services is better within the city corporation compared to neighbouring areas.

This is because rural people need a power supply to use different amenities such as everyday essential equipments, including lighting and electrical devices, which play important roles in making their everyday lives comfortable. For instance, they use television for entertainment and mobile phones for enhanced connectivity, that need a power supply to be operated. As in most other rural areas in Bangladesh, grid electricity supply at the case locations in Gaibandha and Rangpur is interrupted and inconsistent. Most of those living in situations of poverty in these areas cannot afford this power supply. The islanders in Gaibandha do not have any access to grid power supply. They need to use solar power to get electricity, which only a very few influential islanders can afford. While most of the places in Bangladesh suffer from load-shedding to varying degrees, rural people at the case location in Kushtia have access to a consistent supply of electricity because of the nearby substation, which provides a consistent supply of electricity imported from India. This power supply scenario is particularly important for using ICT because that needs a consistent supply of power. It can be argued that overall the inconsistent power supply works as a barrier for rural people to adopt ICT at individual level and this challenge impacts on the adoption of e-learning.

Like the power supply, the condition of the transportation system in rural areas also plays an important role in shaping their quality of life and thereby their wellbeing. The case location in Kushtia is situated within the city corporation, but, apart from having better and increased number of roads, the overall transportation system is about equally poor to all the case locations in Gaibandha, Rangpur and Kushtia. The public transport options within these areas include human driven open-roof three wheelers, gas driven three wheeler taxis,[156] and tractor fitted carriages. However, most of those living in situations of poverty cannot afford to ride these and therefore their mobility remains limited. Cycling is a popular option among rural people but mostly among the young males, because culturally women are not expected to ride bicycles. Usually there is no walkway for the pedestrians and both the roads and streets lack any kind of traffic control measure at these case locations. The roads and streets are completely dark at night, though may occasionally be illuminated by any nearby shop closing late for some reason. During the rainy season, the streets become muddy and slippery, making driving a challenging task, particularly for the cyclists to ride along. During a flood or after continuous heavy rain, transportation in most of these areas comes to a halt, though sometimes a few manually driven wooden boats are used as the only choice for some

[156] It resembles an automated Rickshaw which is either run by battery or gas.

people who can afford. Taking the ferry boat is the only option to commute to the island in Gaibandha, but only able-bodied people can afford it. The overall poor condition of the transportation system has considerable influence over the quality of life at all the case locations. Using the transportation facility requires money, effort, and energy, which most of those living in situations of poverty cannot always afford. The poor condition of the transportation system is one of the reasons why rural people are not keen to visit any institution for learning purposes and they do this in order to save money, time and energy. Socially embedded and community supported e-learning options can address this issue for those living in situations of poverty.

Physical environmental characteristics, thus, influence rural people's quality of life and thereby their wellbeing. The physical environment can shape their lived realities with respect to the livelihood options they can pursue in their locality: the impacts of natural disasters they need to encounter; the availability of a power supply, which is essential for using ICT and other amenities; and the transportation system, which takes up their money, effort, and energy from their already labour-intensive everyday lives.

4.3.3. Uses of ICT

To conceptualise how e-learning might address rural people's sense of wellbeing, it is necessary to understand how they make sense of ICT and associate ICT to their lived realities. It is necessary because this particular use of ICT, as a means to pursue e-learning for wellbeing, is a new phenomenon for those living in situations of poverty in rural Bangladesh. Understanding how rural people use ICT in their lived realities can help minimise the gaps, if any, between the ways ICT is conceptualised on the ground by rural people, and how it is conceptualised at institutional level while developing ICT oriented initiatives for rural people. Among rural people, television is foremost in terms of access and popularity; it is followed by mobile phones, land phones, computers and radio. Based on my observational understandings, I describe below what different ICT options mean to the ordinary rural people in their lived realities at the case locations in Gaibandha, Rangpur and Kushtia.

Although there is a range of ways to access different ICT options, the one that is most common is shared access. The majority of the households in these areas own televisions, which both men and women in the respective families can access. It is a common practice in rural Bangladesh that access to television is shared with the neighbouring

families who cannot afford it. Along with this home-based shared access provision, tea stalls and some shops in the local markets in these areas also offer access to television for their customers, but this option is mainly open to the local males. Although only 20.9% rural households at the case locations in Gaibandha and Rangpur, and 31.4% rural households at the case location in Kushtia have television, the total number of those with access to television is only partially represented by these figures (BBS 2015a). This is because the culture of shared access is not taken into account in those figures. Television is the only ICT option that rural people can operate independently without requiring any guidance, irrespective of their levels of literacy. Among all the ICT options, women can access television the most. Although ownership of a television carries higher social status, it is mostly used as a source of entertainment and information, and as a means of knowledge development, particularly in the areas of agriculture. The majority of the television owning households also have satellite connection because the service is not expensive.[157] However, the islanders cannot afford a television due to the lack of grid electricity and high cost of an alternate power supply, such as solar power.

In terms of individual ownership, mobile phones are the most common ICT option in these rural areas. At all the case locations, more than 80% of people use mobile phones, which includes both shared access and access through ownership (BBS 2015a). Although at household level both men and women can access mobile phones, it is typically the men who own them, except for the women who are involved in professional work or study outside the home. Generally, all the households on the island have mobile phones and most of the households have more than one mobile phone in spite of the lack of grid electricity supply. They keep multiple mobile phones so that when one goes out of charge the other can be used. Charging up a mobile phone is a difficult task on the island and the islanders need to go to the local market on the island or to the mainland to get their mobile phones charged. [158] Therefore, the use of a mobile phone is not as easy as it is on the mainland.

Generally, family members who go to work outside the home, young male family members, and college students keep mobile phones with them. Farmers usually keep

[157] The majority of the rural households that own television can afford the monthly subscription fees for satellite connection which ranges from BDT100 (about £0.78) to BDT150 (about £1.16).
[158] On the island, only a couple of households and shops have solar panel as alternate power supply to encounter the lack of grid electricity supply.

their mobile phones at home while leaving for work in the field, in order to avoid accidental damage while they work. All male farmers wear *lungi*, which does not have any provision for keeping a mobile phone comfortably and safely. [159] Although the literacy barrier previously mentioned does not impact on the use of basic functions, rural people use their mobile phones mostly for calling purposes, in spite of the existence of different paid services other than voice calls. However, some of the rural people, who receive money from family living outside their villages, use mobile phone based money transfer services available at a few shops in the local market. [160] Most of the young male mobile phone users use mobile phones for entertainment purposes. Some of them use low-end smart phones, which ordinary rural people cannot afford and cannot operate on their own. Only a few of these young males use the Internet on their mobile phones and they generally use it for entertainment purposes. Using memory cards within the mobile phones to store audio-visual content for entertainment is considered as a fashion among these young males.[161] They top up the entertainment content through local computer shops. They prefer to use mobile phones as a music player and are not keen to use its radio services.

While mobile phones are pervasive at all the case locations, only a few offices, a couple of business establishments and a few institutions use landline phones. On an average about only 1% of the households at all the case locations use a landline phone (BBS 2015a). Ordinary rural people cannot afford land phone services and they are also not keen to use this service due to the availability of cheaper mobile phone services.

Although at all the case locations, state-run radio channels can be accessed, radios are no longer available to purchase from the markets. [162] Multipurpose devices integrated with radio and music players are available in the market instead. However, ordinary rural people cannot afford these devices. Although rural people at these case locations

[159] Lungi is a traditional dress for male which looks like a skirt when it is worn but at its two ends it actually has same width. This dress can also be found in other South Asian, some African and southern Arabian Peninsula.
[160] In this service scheme a local shop works as the agent of respective bank from where people get the money using their mobile phone based verification through text message. It is becoming a popular means for transferring money among those who are financially excluded from formal banking system. However, there are few vital issues like higher service charge, security of the agent and fraud transactions which influence effectiveness of this service (Siddik *et al.* 2014).
[161] The content refers to electronic files that create audiovisual outputs on mobile screen, such as video songs, images and audio songs.
[162] The commercial frequency modulation (FM) channels in Bangladesh cover mostly urban areas. About 6.8% households in the Rangpur division and 10.1% households in the Khulna division are reported to have access to radios (BBS 2015a),

do not use radio today, older people who remember using it, miss it very much, because of its effective contribution to learning about lives and livelihoods. It can be argued that proliferation of mobile phones and the availability of cheaper television have contributed to the decline in radios from the rural reality. However, rural people do not use mobile phones in a way that replaces the use of the radio.

Even a decade ago, rural people used to consider a computer as a device for the elite and highly educated people living in urban areas only. However, now every market at all the case locations has at least one computer shop. At these computer shops rural people can get a range of different services, such as Internet browsing, video calling, copying music and videos to a mobile memory card, electronic composing, printing, online form filling, digital photography, and photocopying. Apart from these computer shops, every high-school has a laptop, provided by the GoB to encourage and support the students studying computer science. The other place where rural people can access computer is the Union Information and Service Centre (UISC).[163] However, to them the UISC is a centre to collect different government documents such as documents on land registration and national identity card. Usually, they are not keen to visit UISC because it incurs travel expenses. Rural women in particular, do not feel comfortable visiting UISC, mostly due to the conservative sociocultural norm that discourages women from going outside their homes freely. To most of the rural people, a computer is a device used for official procedures only. While almost all of them now have a better understanding about computers, very few of them can afford one, let alone have the required skills to operate it. [164]

While at a national level, use of the Internet has been increasing fast, at all the case locations Internet access scenarios are different (BTRC 2015). Rural people at the case locations do not have adequate ideas about Internet and its usefulness in their lived realities. Only a few young males use Internet, and they generally use it on their mobile

[163] Union Information and Service Centre (UISC) and Access to Information (A2I) are two flagship initiatives from the GoB under its vision of Digital Bangladesh by 2021 (GoB & UNDP 2010; Faroqi 2015; Alam & Brooks 2014). A2I operates UISC with the help of UNDP and promotes mostly e-governance and ICT related services engaging local technopreneurs. With the help of computer and Internet, UISC offers – a) some of the government services, such as land registration; b) some ICT related services (which ordinary computer shop also provides) such as Internet browsing, Internet telephony, printing, and scanning; and c) information sharing services through websites and sometimes through a few ad hoc projects which utilise its existing ICT infrastructure (Faroqi 2015; Alam & Brooks 2014). UISC utilises only high-tech options such as computer and Internet.

[164] About 1.9% households in Gaibandha and Rangpur and 0.8% households in Kushtia are reported to have access to computer (BBS 2015a). The majority of these households are situated in the suburban areas.

phones. They use the Internet mainly for entertainment purposes and have limited ideas about how the Internet can be used for learning purposes and what can be learnt using the Internet. However, the majority of rural people are keen to know more about the Internet and how it can help them live a better quality of life.

Therefore, the current state of embeddedness of different ICT options in rural reality shows that rural people's use of ICT for e-learning purposes is marginal and is mostly around television. It also shows that members of community play pivotal roles in facilitating access to some of the ICT options such as television and mobile phones, and that shared access is a convenient option to promote access to ICT, particularly for those living in situations of poverty.

4.4. Reflections on current situation

I present below a reflection of the current situation of the case context in terms of the prospect for e-learning in addressing the wellbeing of those living in situations of poverty in rural Bangladesh. To grasp an overall understanding of the broader picture in this respect, I also incorporate related views of a group of experts I interviewed who specialise in the areas that relate to e-learning and wellbeing, such as ICT, education, agriculture, development studies, policy, microfinance, gender, women entrepreneurship, community empowerment and economics.

Although Bangladesh is progressing in building better ICT infrastructure, the urban-rural differentials have considerable influence over rural people's adoption of ICT. For instance, although there are twelve FM radio channels active in different urban areas in Bangladesh, my observation identifies that these are not reachable in rural areas. Policy frameworks also prioritise urban areas with regard to implementing ICT initiatives and promote mostly high-tech ICT options with comparatively less attention to low-tech ICT options (GoB 2002, 2006, 2008, 2009b, 2012, 2013). However, my observations indicate that low-tech ICT options are rather intimately connected to rural realities. These differences discourage local formal economy in rural areas to embed high-tech ICT options to its possible fullest extent, which eventually makes rural people think high-tech ICT options are not representative of their realities. This is not to say that there exists no initiative in rural areas around high-tech ICT options. For instance, UISC has been active in different rural areas to offer high-tech ICT related services. However, the issue is around whether rural people are offered these high-tech ICT options in an

appropriate socially embedded way that can motivate them to make these ICT an integral part of their reality. The case context shows that only low-tech ICT options, such as television, mobile phones and radio, are socially embedded, but through their limited use, as sources of entertainment and information, means of connectivity, and for learning agriculture. The major current challenges are that high-tech ICT options are not adequately familiar to ordinary rural people and that low-tech ICT options are not integrated adequately to promote adoption of ICT among them. Given that currently e-learning is not actively engaged in fostering rural people's wellbeing, resolving these challenges are pivotal if e-learning is to support rural people to achieve a sense of wellbeing.

Sociocultural characteristics of the case context show that rural people's learning initiatives are mostly around their lives and livelihoods, and most of the livelihood activities remain in the areas of agriculture. Rural people living in situations of poverty cannot afford to own or to access the high-tech ICT options used for e-learning, such as computers and the Internet. Therefore, shared access remains the only option in this regard in the closely-knit collectivist rural societies, though patriarchy and conservative sociocultural norms usually add an additional barrier for women. The case context also shows that rural people prefer informal means of learning and learning from within their local communities instead of attending institutions to learn in a formal setting. This implies their preference for social embeddedness of their learning opportunities. This brings a challenge of building local level capacity around ICT and enabling the local community to maintain the initiatives around e-learning. Rural people's dependency on local language for their intelligibility of the content, and their lack of ICT skills required to adopt e-learning using high-tech ICT options, are the other challenges to conceptualise e-learning as a means of achieving their wellbeing through learning and developing awareness, skills and knowledge, related to their lives and livelihoods. Existing ICT usage patterns in the labour-intensive lifestyle of the time-poor rural people, show that they are familiar with only limited applications of the ICT options and have limited understanding of the high-tech ICT options, such as computers and the Internet. Under these circumstances, helping ordinary rural people to make sense of different ICT options in boarder perspectives, and helping them with related skills support are the other challenges to conceive e-learning as an integral part of their lived reality, in order for them to achieve wellbeing.

All eighteen members of the knowledge communities I interviewed as the group of experts, correlate e-learning with its potentials for addressing wellbeing in terms of developing awareness and knowledge about different health issues such as vaccination for the infants and care for the expectant mothers. Bhattacharya [KC18] argues that e-learning can address particular health issues that are considered as taboo such as mental health problems. With the help of e-learning one can develop awareness and knowledge about mental health problems and the related best practices from the professional suggestions, maintaining privacy amidst the persisting prejudice against mental health problems. Meraz [KC2], Papiya [KC16] and Akram [KC1] emphasise that farmers can utilise e-learning as an alternate to agriculture related institutional trainings, such as agricultural adaptation techniques to climate changes and in-house culture of commercially profitable produces, which they cannot avail due to institutional capacity constraints and/or their inability to afford time, money and energy. They also believe that e-learning can be an effective means of sharing agricultural best practices among farmers in different areas in Bangladesh. They argue that on-demand knowledge support through e-learning can help farmers avoid some of the resulting economic shocks of agricultural epidemics and thereby can enhance their wellbeing by protecting them from probable losses.

Azad [KC3], Jui [KC4], Farhan [KC14] Aziz [KC15] and Yusuf [KC17] argue that e-learning can be useful in developing awareness among rural people about issues such as after-effects of natural disasters and long-term impacts of child marriage, which have substantial influence over their wellbeing. Nazmunnahar [KC11], Banu [KC12] and Samantha [GO1] think that e-learning can be a convenient opportunity for ordinary rural people to learn about their rights and entitlements, which can be considered as the first step towards their empowerment that can lead them to get their voice heard, as well as help them achieve their wellbeing in the end. Bhattacharya [KC18], Mahfuz [KC9], Qadry [KC5], Habib [KC8] and Azad [KC3] emphasise that e-learning opportunities can offer rural people with skills development opportunities for income generating purposes, such as needlework, which can enhance their wellbeing through economic empowerment and the resulting social empowerment. However, all eighteen members of the expert group argue that to foster wellbeing through learning, and development of awareness, skills and knowledge, e-learning opportunities need to be on-demand and supported by adequate contextual contents, which remains as another critical challenge in this regard. The above views from the members of knowledge communities show that

there exist substantial differences in the ways they conceptualise e-learning as a means of learning and developing awareness, skills and knowledge than the ways e-learning is currently integrated in rural realities, merely as a means of learning agricultural techniques.

4.5. Conclusion

Bangladesh is growing in terms of its ICT infrastructure and related policy framework. The vision of the GoB around 'Digital Bangladesh by 2021' and its related initiatives have been supporting this growth. However, emphasis is given by GoB mostly on e-government and on promoting high-tech ICT options, but without paying adequate attention to low-tech ICT options, which is currently embedded in rural realities. Currently, e-learning is not effectively incorporated in rural realities to foster rural people's wellbeing. Most of the areas where e-learning could help rural people by offering learning, and awareness, skills and knowledge development opportunities around live and livelihoods are also left unaddressed. My observational understanding indicates that although high-tech ICT options are not adequately embedded in rural realities, rural people are keen to utilise these options. However, they want to do it in accordance to their affordability in terms of time, money and effort. The labour-intensive everyday lives of those living in situations of poverty show that they cannot afford learning new ICT skills and purchase all the required resources. This leaves shared access to ICT for e-learning purposes, as an option for the closely-knit collectivist society in rural Bangladesh.

Chapter 5

The three cases of my research

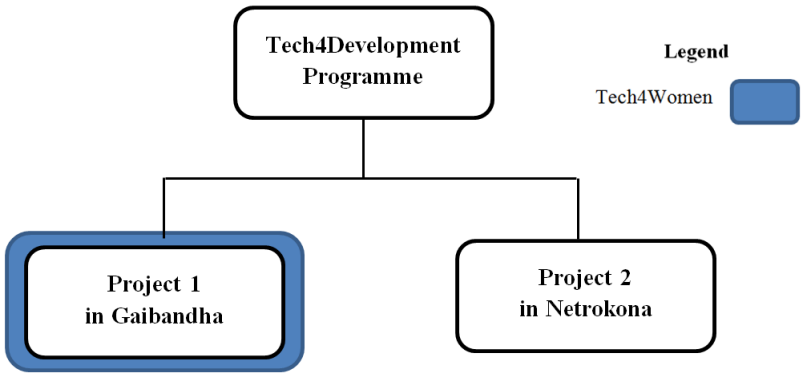
5.1. Introduction

In this chapter, I describe the three cases of my research and discuss their characteristics. I discuss the operating mechanisms of the underlying initiatives of these cases, and the roles played by the respective implementing actors. These descriptions and discussions develop the groundwork for the individual case analysis presented in chapters six, seven and eight respectively. This chapter is divided into three main sections in order to present the three cases.

5.2. The Cycle-Women Case

This case is developed around a project (which I name Tech4Women) implemented by Tech-Net, a voluntary activist institution. Tech4Women is funded by the Human-Need, a national level NGO. Tech4Women is one of the two projects in the Tech4Development programme of Tech-Net (Figure 5.1) and is the longest running project of the programme.[165] Tech4Women is located in the Gaibandha district of the Rangpur division.

Figure 5.1: Scope of the Cycle-Women case



The central focus for this case is some local educated rural women who were selected and then trained by Tech-Net. [166] I name these women cycle-women. They offer different kinds of services to groups of neighbours as well as to individual neighbouring villagers. Paid for their services, they offer basic health check-ups, such as measuring

[165] This programme has another project running at Netrokona that operates in a different way and is not a part of my case. See Appendix XVI to locate the district in the map.
[166] Tech-Net selects only those women who have completed a minimum of ten years of education.

blood pressure, blood sugar and body mass, and pregnancy testing. They also offer ICT-based support, such as video calling over the Internet, Internet browsing, searching for information, online job searching, online job applications, and mobile phone based money transfers. Their services for the group members also include demonstrations of digital content. The content shares knowledge in the areas of health, agriculture, rights and entitlements. The cycle-women offer this knowledge sharing service to group members free of charge. They use bicycles to reach their service users in their homes. [167] This in itself is unusual because cycling is not a part of the cultural practice among women in rural areas. This distinctive approach motivates me to name these women as cycle-women.

My case involves: five cycle-women[168]; forty-four service users of these five cycle-women; six officials of Nijer-Kaj, the local host NGO that implements Tech4Women for Tech-Net; two officials of Tech-Net; and two local high-school teachers.

5.2.1. Implementation approaches of Tech4Women

I discuss below how and why Tech-Net developed different approaches for the implementation of Tech4Women. I also show how these different approaches shape the ways in which the cycle-women work.

Tech-Net considers cycle-women as independent technopreneurs claiming that the training it offers to the cycle-women enables them to earn money through their technopreneurship. [169] It provides the cycle-women with some basic training in the areas of computer operating, use of Internet, Internet based video calling services, and in operating blood pressure, blood sugar, body mass, and pregnancy measuring devices or tools. It also provides them with digital content, which includes video clips, audio-visuals, animations, and presentation slides with texts and images. The training and content provided enable the cycle-women to earn some money through their technopreneurship. However, these do not enable them to continue their technopreneurship on their own because they depend on Tech4Women for ICT related technical supports, as well as for income opportunities.

[167] Service users include group members who attend courtyard meetings as well as their neighbours who do not attend courtyard meetings but sometimes call cycle-women for health check-up services.
[168] In my thesis, by the term cycle-women, I refer to all the five cycle-women I interviewed.
[169] A technopreneur is an entrepreneur who deals in computer and/or Internet technology.

The approach to operating Tech4Women is substantially influenced by the financing options Tech-Net utilises. Tech-Net follows multiple financing approaches to operate Tech4Women. These approaches are influenced by the respective patterns of available funding support. Different approaches offer different support services to the cycle-women. As a result, the cycle-women either receive the required devices and tools, such as a computer/laptop, Internet modem, speaker, digital blood pressure measuring device and pregnancy testing tools for free, or need to pay for these devices with the help of bank loans, which Tech-Net helps them to manage. [170] Although Tech-Net provides financial and training supports for Tech4Women, it provides mentoring and computer related technical support through Nijer-Kaj. The cycle-women usually target local women and girls as their service users who have comparatively lesser mobility and access to ICT than local men have. Nijer-Kaj helps the cycle-women to find their potential service users in their respective localities.

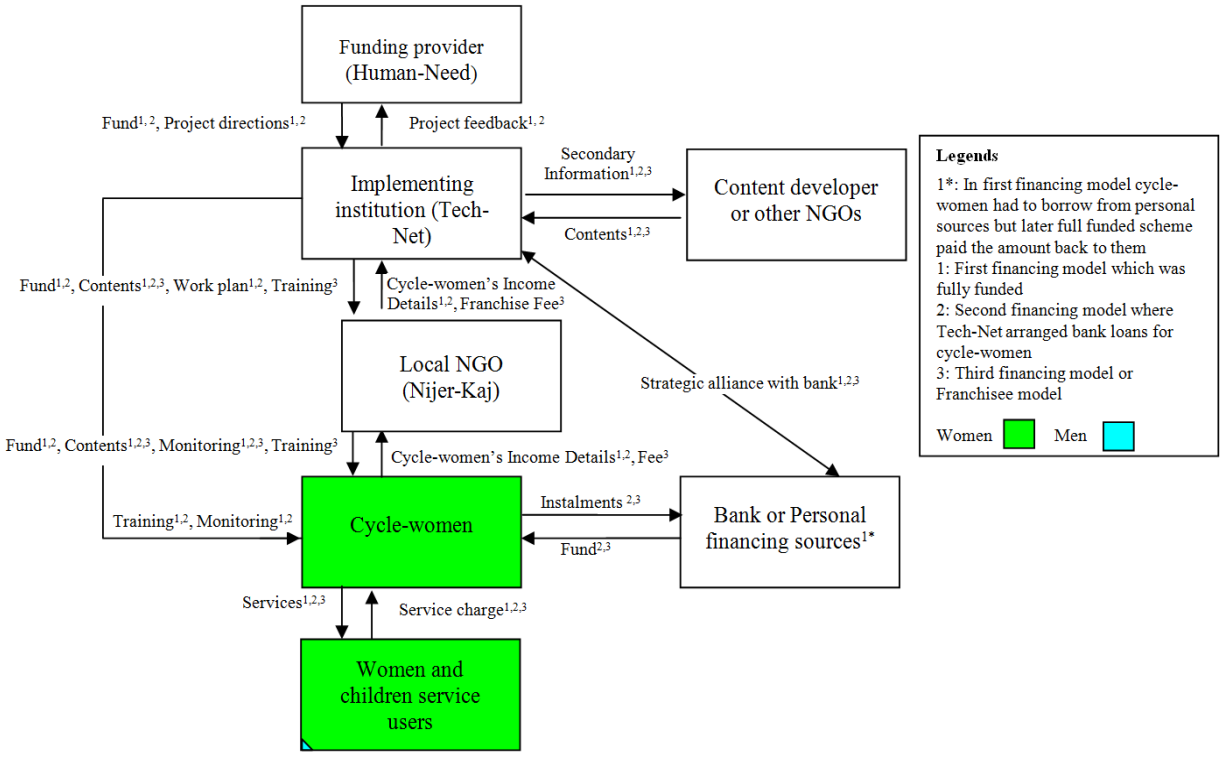
Tech-Net has devised three different approaches (Figure 5.2) to implement the Tech4Development programme in response to changes in available funding supports at different points of time. These approaches are: fully funded approach, personal bank loan supported approach and franchise model approach. The approach adopted to operate Tech4Women depends on the negotiations between Nijer-Kaj and Tech-Net. Tech4Women started under the fully funded approach; following the demise of this approach, Tech-Net activated the personal bank loan supported approach. However, after considering the probable outcomes, Nijer-Kaj decided not to adopt the franchise model approach, which was offered by Tech-Net after introducing the personal bank loan supported approach. I discuss all three implementation approaches below.

Initially, Tech4Women started at Gaibandha under the fully funded approach and with a group of ten cycle-women by the end of 2010. Of those ten cycle-women, only three are still engaged in Tech4Women, with the other seven having left this profession. In this initial period, Tech-Net used to receive funding from Human-Need. This funding used to pay Nijer-Kaj to support and monitor the cycle-women's activities, and to pay the cycle-women to demonstrate digital content during their courtyard meetings (e-learning sessions) with their respective groups of service users. [171] Initially, the ten cycle-women

[170] Throughout this case, I use computer and laptop interchangeably, because while cycle-women use laptops, majority of their service users do not distinguish between a laptop and a computer.
[171] The courtyard meeting is a popular way to conduct group discussions in rural areas. Most of the houses in rural areas have open space in front of them, which are used for this courtyard meetings.

had to invest about BDT75,000 (£581.40) each to enrol in Tech4Women to become cycle-women; Human-Need returned that amount to them when it decided to fund Tech4Women fully. This group of cycle-women thus started earning from the very first day of their technopreneurship without worrying about repaying the money they had managed from their personal sources. During the period when funding support from Human-Need was available, they used to provide services around health and ICT based support, and demonstrated digital content on issues around health, agriculture, rights and entitlements. Saleha [BC1], one of the five cycle-women I interviewed, who belonged to this initial group of ten, claims that the cycle-women used to enjoy better support services from Nijer-Kaj and Tech-Net during this initial period, which lasted for about two years.

Figure 5.2: Implementation approaches of Tech4Women



By the end of 2012, funding support from Human-Need ended. As a result, Tech4Women remained suspended for about a year due to scarcity of funding. The cycle-women could not continue their technopreneurship because there was no support service available from either Nijer-Kaj or Tech-Net. Although Saleha [BC1] did get some service requests for health checks and Internet browsing support from a few service users during that time, this was not enough to sustain her technopreneurship.

Ashit [PO5], the previous in charge of Tech4Women at Nijer-Kaj, claims that this funding crisis was the reason behind introducing the personal bank loan supported approach by Tech-Net. [172]

In the second half of 2013, Tech-Net introduced the personal bank loan supported approach; this was due to a lack of success in managing funding for Tech4Women, after funding from Human-Need ended. Tech-Net arranged personal bank loan facilities for potential cycle-women to enable them to purchase the devices and tools required for their technopreneurship. It started offering training on basic computing to some officials at Nijer-Kaj, in exchange for technical supports from Nijer-Kaj for all the cycle-women. In the absence of income through funding support from Tech-Net, this training has enabled Nijer-Kaj to earn money through offering basic computing training to local young ICT enthusiasts. This arrangement between Tech-Net and Nijer-Kaj allows for existing and new cycle-women to receive support services from Nijer-Kaj. However, unlike existing cycle-women, newly recruited cycle-women under this approach need to pay their loans through instalments from their income from the very first day of their technopreneurship. Newly joined cycle-women offer similar services that the cycle-women from the initial group of ten have been offering. Four (Jaynab [BC24], Fatema [BC30], Suporna [BC31] and Jayantika [BC18]) out of the five cycle-women I interviewed, joined Tech4Women under this approach and a total of eight cycle-women are now working for Tech4Women.

Due to changes in the underlying financing approach, Tech-Net now allows cycle-women to convene e-learning sessions only when it can get them engaged with other funded projects that can be related to e-learning sessions. The topics of the e-learning sessions are also influenced by the theme of the new project. For instance, cycle-women now convene e-learning sessions for their group members, only to develop awareness about people's right to access public information, as per the Right to Information Act.[173]

[172] The previous in charge of Tech4Women at Nijer-Kaj was more helpful with information than the existing head because he had worked for this project since its inception. He knows all the changes this project has gone through. At present he works on other projects which Nijer-Kaj implements. He was released from his responsibilities for Tech4Women because Nijer-Kaj found it cheaper to engage a new staff member as the head. This happened when Tech-Net adopted the personal bank loan supported approach to implementation of Tech4Women and when income of Nijer-Kaj went down due to lack of funding support from Tech-Net.

[173] Right to Information Act, 2009 is enforced by the GoB to facilitate free flow of information and to ensure that people know and can exercise their rights to information. In general, it implies people's right to obtain information from authority. Details of this Act are available from http://www.moi.gov.bd/RTI/RTI_English.pdf (accessed 09/07/2014).

However, this added responsibility through new project engagement limits cycle-women's usual services, and all of the cycle-women I interviewed acknowledged this limitation. Therefore, e-learning option for cycle-women's service users substantially depends on funding support.

In spite of the funding instability and temporary closure of Tech4Women, Tech4Development received international recognition (BOBS 2013). Ashit [PO5] claims that this recognition motivated Tech-Net to scale up Tech4Development and to introduce a franchise model approach by the end of 2013. Tech-Net plans to manage this franchise model approach, in addition to the personal bank loan supported approach, by means of cross-subsidy.[174] According to this approach, local NGOs or institutions need to pay Tech-Net to get franchise agreement. Tech-Net would train these local NGOs or institutions and offer guidelines so that they can train their potential cycle-women. It would also train staff from the local NGOs or institutions in basic computing to enable respective NGOs or institutions to earn money through offering related training programmes to local ICT enthusiasts. However, Ashit [PO5] claims that Nijer-Kaj did not accept this third approach because it had not been found effective at other places.

5.2.2. The cycle-woman working in Tech4Women

Here, I introduce the five cycle-women I interviewed, discuss the socioeconomic and sociocultural realities they faced prior to becoming cycle-women, and then discuss some of their distinctive characteristics, which led them to become cycle-women.

The five cycle-women I interviewed are Saleha [BC1], Jaynab [BC24], Fatema [BC30], Suporna [BC31] and Jayantika [BC18]. Except Saleha [BC1], who is over 25 years old, all others are just above 20 years old. All the five cycle-women have completed the tenth grade of their education. This is a requirement set by Tech-Net to become a cycle-woman. All of them are college students except Fatema [BC30], who is a housewife with no children. The cycle-women are keen to develop ICT skills, particularly those required to operate computers, commonly used software at offices, and the Internet.[175] They believe that these skills help develop competencies, which can help them to get

[174] In a cross-subsidy approach, an organisation manages its multiple projects by subsidising the weak project(s) with the earnings through overcharging other strong project(s).
[175] The commonly used software includes but is not limited to composing software and presentation (slides) making software.

better job opportunities. They informed me that considering the opportunities for ICT skills development and immediate earning potentials, they became keen to join in Tech4Women. The cycle-women argue that the thought of being able to earn for their families even motivated them to accept the challenge of cycling as part of becoming a cycle-woman, defying the local sociocultural norm around cycling in rural areas. Cycling is considered a male activity by most of the people in Bangladesh and the perception is even stronger in rural areas. Accepting this challenging condition to become cycle-woman thus appears as an instance of challenging the patriarchal social structure (Cain *et al.* 1979; Chowdhury 2009; Kabeer 1994, 1998; Momsen 2004).

Along with accepting the challenge of cycling, the cycle-women who joined in Tech4Women under the personal bank loan supported approach[176] also had to invest a large amount of money[177] (BDT100000, about £775.2) to buy required devices and tools. For all of them it was a difficult decision because it involved investing their family's hard earned money. The norm in patriarchal rural Bangladesh is that parents usually give higher priority to their sons over their daughters (Cain *et al.* 1979; Chowdhury 2009). It is therefore understandable that investing a large amount of money in the daughter was not a priority for many heads of household (Raynor 2007). The heads of the households usually expect that their daughters or sisters will leave the parental home after getting married (Cain *et al*. 1979; Chowdhury 2009). Generally, in rural areas girls are brought up in a way that, irrespective of their formal education attainments, they need to learn post-harvest crop processing, homestead gardening, homemaking, and cooking skills, so that they can take care of their own family, including their in-laws (Momsen 2004). This stereotypical role of women perhaps discouraged the cycle-women's household-heads in supporting the cycle-women. Therefore, it is understandable that cycle-women needed considerable mental strength and determination to make the decision to undertake the role of a cycle-woman.

All the five cycle-women demonstrate a strong determination and they appear vocal and outgoing, compared to other women in their localities. However, throughout the process

[176] At the beginning all cycle-women had to invest money to get involved in Tech4Women. However, those who joined in 2010 received their invested amount reimbursed because Human-Need later provided extra fund for the devices. Only one (Saleha [BC1]) of the five cycle-women I have interviewed belong to that group. She later bought a personal computer with her grocery shop with the money she got refunded by Human-Need. She bought this computer to offer mobile phone content downloading services to local rural people.

[177] For ordinary rural people living in situations of poverty, this amount equals to their lives' total savings for the majority of them.

of becoming cycle-women, they all encountered challenges of different degrees both at home and within their societies. Saleha [BC1], whom Nijer-Kaj endorses as the most active and extrovert cycle-woman, faced challenges and strong resistance from her family. She even had to leave her house to stay with her aunt for more than a week because her father was furious to learn that she joined Tech4Women as a cycle-woman. All the cycle-women encountered challenging situations outside their homes, but they confronted those with courage. The cycle-women appear strong and determined to breakout some of the conservative social norms and boundaries. It can be argued that they are motivated to apply their agency to challenge the persisting patriarchal sociocultural norms.

This determination, which is a characteristic of those women who became cycle-women, often means that they might be perceived as rebels. By this I mean that they are breaking sociocultural stereotypes about the place of women in their society and their role in rural Bangladesh. However, as they are earning money through their technopreneurship and they can now offer their families with financial support, this perception has changed. They are no longer seen as rebels. Their views are now acknowledged by their families and they get comparatively less gender-biased treatments from their parents, as well as their neighbours. Tech4Women thus empowers cycle-women by enabling them to earn money. This money largely goes into supporting their families, which gives cycle-women a sense of empowerment. Saleha [BC1] argues that this financial contribution to the family is considered by respective family members as the emblem of cycle-woman's empowerment and worth. However, this flow of income depends considerably on the continuation of Tech4Women or cycle-woman's paid involvements in other projects, implemented by Nijer-Kaj. Although the cycle-women argue that they feel empowered and confident after getting involved with Tech4Women, they admit that they are not keen to continue this technopreneurship as a career. Rather they consider this technopreneurship as a temporary earning and skill building opportunity for a proper job in future.

It can be argued that the strong determination and outgoing characteristics of these cycle-women motivated them to challenge the persisting patriarchal sociocultural norms through their engagement with Tech4Women. They now experience less gender discrimination (though not gender equality) because of their earning capacities, which they developed through working for Tech4Women.

5.2.3. New skills and the work of the cycle-women

I discuss below how the cycle-women have developed new skills through their involvements in Tech4Women and by means of e-learning. I also outline the work of the cycle-women and show how their newly developed skills enable them to innovate new services, beyond the framework of Tech4Women.

The cycle-women learned some skills and gained expertise through taking part in the trainings arranged by Tech-Net, and through 'learning by doing'[178], with the help of e-learning (Foster & Rosenzweig 1995; Gentry 1990). The skills acquired are basic computer operating, working with the Internet and some basic health checking techniques. They can now read online newspapers, search information, download free content, install software, compose document files, use online social networking sites, and make calls using video calling software.[179] They use e-learning to develop knowledge around the focus areas of Tech4Women. E-learning offers them a new means to learn and develop knowledge and skills without striving for largely inadequate institutional support. They can also measure blood pressure using digital machines, can test blood sugar using a handheld device, carry out pregnancy tests, and calculate body mass using scales. The cycle-women consider these skills and expertise as empowering because they enable them to do a range of activities that they could not do earlier. They can now earn money utilising these skills and expertise, which also brings economic empowerment for them.

All the five cycle-women claim that their newly developed ICT skills through Tech4Women have enabled them to explore previously unknown learning opportunities through computers and the Internet. They have developed critical learning skills by searching for and accessing online sources, thereby adopting a 'learning by doing' approach. Suporna [BC31] argues that Tech4Women trained the cycle-women only on simple options of Internet use and text composing software. The other four cycle-women also second her opinion and claim that they learnt more by searching tutorials about different topics on the Internet and then by internalising those. They eventually

[178] Learning by doing implies a learning process where a person learns through reflecting on what s/he does. It can also be referred to as experiential learning which is interactive, participatory and applied form of learning process (Gentry 1990). Foster and Rosenzweig (1995) particularly identify that learning by doing helps farmers to develop skills and gather experiences.

[179] Content refers to the files available on the Internet for free download that might be in text, graph, audio, video or any other format. The cycle-women download this content so that afterwards they can use this without using Internet connection.

have developed a level of competency through practising their new skills. They have learnt how to use different software beyond the text composing one, which furthers their learning with the help of the Internet. For instance, using particular software, they have successfully overcome the language barriers that they face while learning from English sources on the Internet. They use the Bangladeshi software Avro to translate English into Bengali. [180] It can be argued that along with offering the cycle-women with enhanced agency, ICT skills create a virtuous cycle of skill- building for them, as these ICT skills lead them to acquire other skills by means of e-learning.

The cycle-women argue that while they can develop new skills with the help of the Internet by utilising their newly developed ICT skills, they are concerned about other factors that influence their access to ICT. For instance, in spite of their ICT skills, they are sometimes discouraged to access the Internet due to its high cost and their limited ability to afford it. All of them demand that GoB intervene in this matter so that those in situations of poverty can also have access to the Internet for free or at affordable cost. Another issue they refer to is around the availability of local technical support for ICT. Currently the cycle-women pursue informal peer mentoring at the Nijer-Kaj premises after their day's work. They meet at Nijer-Kaj and share anything new they have learnt or found on the Internet. This practice helps them with new ideas and assistances from peer cycle-women. However, they argue that sometimes too many information sources on the Internet confuse them and that they believe suggestions from experts could have been useful for them to direct their learning to more appropriate online sources. All of them claim that apart from Kishor [PO7], the Information Technology (IT) support expert at Nijer-Kaj, the only local community members who they would probably turn to for expert advisory support on ICT are the local high-school teachers. [181] These teachers have received ICT training from GoB in operating computer and using the Internet. However, these teachers are not trained in computer troubleshooting or fixing. As a result, the cycle-women feel the need for local technicians to whom they can refer to for any related support. [182] When ICT support provided by Tech4Women becomes unavailable, the cycle-women need to travel 50 kilometres to get a technician to repair

[180] Information technology (IT) expert attached to Tech4Women introduced cycle-women with particular Bangladeshi software, which they claim is very useful in translating English words and can be applied to entire webpages in English.
[181] Students of grade six to grade ten study at high-school. After completing tenth grade, they sit for the secondary school certificate (SSC) examination. SSC is considered as the minimum standard for education by majority of the rural people.
[182] A technician refers to an expert professional from the formal economy who can troubleshoot and fix ICT devices.

their devices. This costs time and money for them. Saleha [BC1] claims that without this local technical support, when Tech4Women based ICT support becomes unavailable, all the cycle-women stop using computers and the Internet. These factors thus influence cycle-women's ICT skills development and impact their related activities and work on Tech4Women.

The cycle-women organise their work by having three or four groups of service users. Each group has about twenty members in it. The Nijer-Kaj helps them to identify potential neighbouring areas to find group members and form their groups. Usually the cycle-women offer their ICT support and health check-up related paid services after their courtyard meetings with respective groups. Courtyard meetings offer them the benefit of getting many people together at the same time. During the courtyard meetings they share awareness-developing information and transferable skills using digital content.[183] Tech-Net sets the topics, schedule and frequency of the group courtyard meetings and direct Nijer-Kaj accordingly. Tech-Net buys the digital content for Tech4Women from a commercial content developer and sometimes from other NGOs. The cycle-women share knowledge in the areas of general health issues, best practices for child rearing, infant care, agriculture (such as making organic fertiliser and seeds preservation techniques), government support[184] for those in disadvantageous situations, and the RTI Act.

The information the cycle-women discuss and demonstrate, with the help of digital content, come from the expertise of different professionals and/or experts such as physicians, and health and agricultural experts. For instance, the cycle-women discuss the impact of family planning and how rural people might adopt those practices. They also share information on where to go and who to ask for assistance about these issues. The cycle-women state that their group members prefer to watch health related content the most. However, group members also need physical assistance beyond these e-learning sessions, in order to materialise some of their learning. For instance, Saleha [BC1] argues that her group members did not know about the government support that those in disadvantageous situations are entitled to, before she convened digital content based demonstrations during her courtyard meetings. She claims that those who qualify

[183] I use the term digital content interchangeably with content, and by both the terms I imply similar objects in my thesis.
[184] GoB offers old age allowances for those who are 65 years old or over and who meet some other conditions. It also offers widow allowances through social safety net programmes (Ahmed, I. 2013).

for these benefits need someone to help them with processing their applications. She accompanied three of her group members to the local government office to process their benefit claims. Thus, the cycle-women have become both knowledge brokers and local experts.

The free courtyard meetings the cycle-women convene, appear as a motivating element in cycle-women's service design, which influence service users to consume the paid services they offer afterwards. The fee cycle-women charge for their services is their primary source of income through this technopreneurship.[185] Sometimes the cycle-women also visit individual group members or their neighbours to offer these services when they are contacted over mobile phone. These service users sometimes also rent laptops and Internet modems for browsing purposes. However, the cycle-women comment that demand for this renting service is very limited, and those that do use this service are usually local students who study in the cities and visit this area during vacations. They usually borrow these for Internet browsing, job search and online job application purposes. In this way, it appears that the cycle-women also serve the purposes of a cyber café for rural people.

Although the cycle-women work within their own local area, their working environment is not free from difficulties. When the cycle-women are on duty, they usually need to carry a laptop, camera, portable speakers, a blood pressure measuring device, a diabetic testing device, pregnancy testing tools, and first aid box in a considerably large bag. With their heavy bags full, during rainy days they struggle hard to ride bicycles on the roads, which become slippery and muddy. They also need to wear a heavy apron, a mandatory requirement by Tech-Net. Traditionally, rural people identify healthcare professionals by this type of apron. The rationale behind imposing such a dress code is probably to gain the respect awarded to a health professional. However, the cycle-women state that the apron is troublesome to them because it creates considerable inconvenience to them especially during hot and humid days. In this way it can be argued that this technopreneurship sometimes brings inconvenience for the cycle-women, which can be attributed to their work pattern as designed by Tech-Net.

[185] Tech-Net made a proposed price list for their services. However, cycle-woman applies service charges based on the economic condition of their service users. For instance, usually they charge BDT20 (£0.16) for blood pressure measurement but sometimes they charge BDT50 (about £0.39) or even offer free services based on the economic condition of the service user.

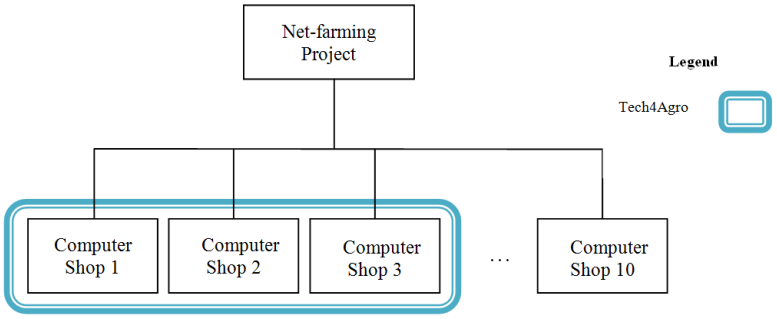
ICT skills not only enable cycle-women to learn new skills through e-learning beyond the remit of Tech4Women, it also develops an avenue for them to become creative in innovating new services and utilising the potentials of e-learning to address local priorities. For instance, Jayantika [BC18] sensed that teaching children on pre-primary level topics using digital content such as animations and video clips might be an innovative way to educate children.[186] She also anticipated that this innovative service might be a good source of income for her, which even Tech-Net could not foresee as a possibility. She started this service in early 2014 at a neighbouring school owned by Nijer-Kaj. Since the beginning, she has been receiving encouraging responses from both the children she teaches and their parents. [187] She teaches English and Bengali alphabets, rhymes, moral lessons and basic health and hygiene practices. It has become a stable source of income for her that she can pursue alongside her other responsibilities as a cycle-woman. This demonstrates that ICT skills can turn rural people into innovative service designers. These skills enable the cycle-women to address contextual issues and realise the potentials of e-learning, some of which even Tech-Net could not sense as a possibility.

5.3. The Computer-Shop Case

This case is about the Net-farming project of Agro-Tech, a national level consulting firm. Net-farming has been operating in different regions of Bangladesh since July 2012. It was co-funded by: Market-Aid, a collaborative funding initiative, which promotes market oriented solutions to development issues; [188] Phone-Com, a multinational telecommunication operator in Bangladesh; and Agro-BD, a local conglomerate,[189] which produces agricultural commercial products.[190] To implement Net-farming, Agro-Tech involved ten selected computer-shops from ten different regions; these computer-shops are the central focus of this case. In this case, I select three computer-shops at three different locations where Net-farming is being implemented (Figure 5.3). As the ten computer-shops implemented Net-farming in a similar way, I refer to my selected three computer-shops together as Tech4Agro, which in principle is a representation of Net-farming.

[186] Pre-primary level is a period before formal schooling when kids go to school to have fun and learn by means of informal ways. This is an emerging trend in cities but in rural areas it is very uncommon.
[187] She teaches a group of thirty children who are below five years old.
[188] The collaboration includes funding support from the UK, Denmark, and Switzerland.
[189] Conglomerate implies a category of big companies that deal in multiple industries, for this case it is concerned with agriculture industry.
[190] Agricultural commercial products imply seeds, chemical fertilizers, pesticides and insecticides.

Figure 5.3: Scope of the Computer-Shop case

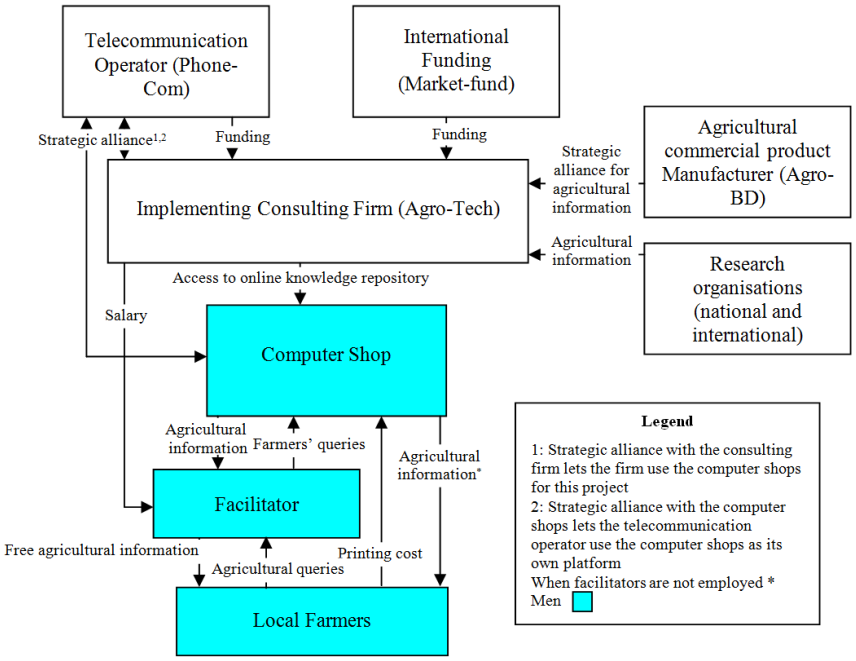


The three computer-shops in this case are located at three different locations in the Rangpur division. One, which I will refer to as Gai-CShop, is located in the Gaibandha district of the Rangpur division. The other two computer-shops, which I will refer to as Com-Rang and PC-Rang, are located in two neighbouring sub-districts of the Rangpur district.[191]

These computer-shops have been facilitating access to an online repository of agricultural knowledge managed by Agro-Tech. [192] To link local farmers with this online knowledge repository, Agro-Tech employed male facilitators for the computer-shops except in the Com-Rang, where the technopreneur needs to play the role of both computer operator[193] and the facilitator. Technopreneurs of Gai-CShop and PC-Rang work as respective computer operators. Facilitators were employed to contact local farmers to enquire about their agricultural problems and offer free consultation services. The technopreneurs used to access the online knowledge repository to share agricultural knowledge with respective facilitators and, in the case of Com-Rang, directly with the local farmers. However, since when the facilitator support was withdrawn by Agro-Tech after funding from Market-Aid ended in mid 2013, all three technopreneurs have been playing the roles of both computer operator and the facilitator. The following diagram (Figure 5.4) schematically shows the relationships among the different actors at Tech4Agro.

[191] Every division has a central district which is named after the division.
[192] The knowledge repository refers to a collection of encoded information in text and image formats stored on Internet.
[193] The technopreneur, computer operator and the computer shop owner, all refer to the same person for all the three computer-shops. I use these three terms interchangeably for this case.

Figure 5.4: Schematic diagram of Tech4Agro



My case involves: the three technopreneurs of the three computer-shops; two facilitators; seventeen farmers who are registered as members of Tech4Agro; [194] the head of Agro-Tech; one employee of Market-Aid; and two high-school teachers both of whom correspond to the work areas covered by the facilitators. I present below a description of the computer-shops before discussing the implementation approach of Tech4Agro because the computer-shops pre-existed before Tech4Agro commenced.

5.3.1. The computer-shops

I describe below the central focus of this case - the computer-shops. The description follows discussions about the technopreneurs and the services these computer-shops offer. I present a situated perspective of these computer-shops, which aids the understanding of their roles in Tech4Agro.

In this case a computer-shop is an individually owned and operated small scale business, from where local people can get computer related technical services or purchase related products. The three computer-shops share similar characteristics in terms of available devices they have and the services they offer. Each of these computer-shops has computers, printers, photocopiers, scanners, digital cameras and mobile phones. Their

[194] All seventeen member farmers are male and over 30 years old. In Tech4Agro, farmers were first registered as members before offering free consulting services to them. However, no group was formed to offer services to the member farmers.

customers comprise mostly of young local men, a few women, as well as officials from local institutions [195]. The computer-shops are better furnished and maintained in comparison to other shops in the respective markets. Gai-CShop has a floor space of about 100 square feet, which results in no seating for customers. Although PC-Rang has around 200 square feet of floor space, half of that is let out to earn some extra money, and like Gai-CShop, this has led to no seating arrangements for the customers. Com-Rang has got about 300 square feet of floor space, which is split into two rooms. The smaller front room offers services to customers and has space for seating. In the other comparatively bigger room it offers computer training programmes.[196] The bigger room can accommodate about forty trainees. While both Gai-CShop and PC-Rang have one computer each, Com-Rang has over forty computers because it offers training programmes to local students and young ICT enthusiasts. However, none of these computer-shops have any air-conditioning or dust-control measures inside, as these are expensive to maintain. There are also issues with providing a consistent power supply. However, the three computer-shops use small scale alternate power supplies to support the computers for about an hour, during load shading. Inconsistent power supply has a substantial impact over technopreneurship in rural areas.

Gai-CShop, PC-Rang, and Com-Rang are owned and managed by Milad [PO12], Faruk [PO14], and Shayedul [PO16] respectively, who also manage the computer operating tasks at their computer-shops. They are all young men in their early 30s, graduates, and are well-known to respective local people in neighbouring villages. Although none of them are farmers, they all have arable lands that they lease to local farmers to earn money.[197] They have good relationships with nearby institutions to which they provide computer related support. None of them has any formal ICT education, or have attended any training in ICT, except the three-day training arranged by Phone-Com. They developed their ICT skills on their own through self-directed learning on the Internet (e-learning) and with the help of their friends and acquaintances. This lack of formal ICT training has never been a problem for any of them. This is illustrated through Shayedul [PO16] who has been successfully training local young ICT enthusiasts on basic computer operating and Internet use.

[195] Officials from local institutions refer to the staffs working at local educational institutions, banks and other organisations that do not have their own computer operators.
[196] Mostly the programmes on computer operating.
[197] Usually in rural areas, most of the owners of small business, such as grocery stores, are actively engaged in farming, either directly or indirectly.

These computer-shops offer similar paid commercial services to their respective customers, except Com-Rang, which also offers computer training programmes. These services include computer typing, Internet browsing, video calling over the Internet, online form filling, online job searches and lodging online job applications, printing, photocopying, scanning, taking digital photographs, and making phone calls over mobile phones.[198] They also sell low-end mobile phones, memory chips for mobile phones, mobile phone batteries, mobile phone covers, and a few other mobile phone accessories.[199]

What makes these three computer-shops different from the other computer-shops in respective markets is their commercial affiliation with Phone-Com. As per the affiliation they are to support implementation of its ICT based projects in respective localities. Phone-Com initiated this affiliation in 2006 and the three computer-shops joined in the same year. However, it might be difficult for even local people to identify from outside whether these computer-shops are different from other local computer-shops in the respective markets.[200] This is because almost all computer-shops in respective local markets use the brand logo of Phone-Com on their signboards, like these three computer-shops do. This is a common practice among computer-shops in rural areas and they do it to attract customers utilising the brand familiarity of Phone-Com. By means of the commercial affiliation, these three computer-shops offer different project-specific ICT services when Phone-Com gets involved with implementing any ICT related and/or ICT4D project. The commercial affiliation empowers Phone-Com to use these three computer-shops and their existing infrastructure and business setup as its ICT related project implementing platform. However, the commercial affiliation does not provide any kind of benefit to the three technopreneurs, aside from a three-day training on basic computing, an instruction book on how to access Internet, and an Internet SIM[201] topped up with a couple of months free Internet access. Despite this limited interaction, and the fact that these computer-shops are privately owned, Phone-Com officially claims these three computer-shops as

[198] GoB has introduced offering some of its services online. As rural people usually cannot operate computers, these computer-shop have been offering access and assistance to those online services by filling online forms for respective customers.
[199] Usually they do not sell smart phones because most of the rural customers cannot afford those.
[200] Each of these three computer-shops is located at three different markets. Except the market where Gai-CShop is located, other two markets where PC-Rang and Com-Rang are located have one more computer-shop each, in addition to PC-Rang and Com-Rang.
[201] SIM refers to subscriber identity module or subscriber identification module, which is an electronic device usually used within the mobile phone.

its information centres.[202] By means of a commercial negotiation between Phone-Com and Agro-Tech, Tech4Agro also require these three computer-shops to share agricultural knowledge from the online repository with the local member farmers, free of cost. Therefore, both Phone-Com and Agro-Tech appear to have exercised considerable influence over these computer-shops, utilising the commercial reputations of Phone-Com.

The three technopreneurs informed me that they made the commercial affiliation with Phone-Com anticipating future commercial prospects, such as discounted price or other financial incentives or privileges, but have not yet realised any similar benefit from it. They all have other stable sources of income as they claim that this technopreneurship in their local areas cannot provide enough income for survival. As stated above, Faruk [PO14] already had to rent half of his shop space for extra income. The technopreneurs share that the anticipated commercial prospect of involvement with a big company (Phone-Com) was the main reason why they agreed to offer free services for Tech4Agro. However, they all claim that they are not enthusiastic about continuing offering these free services, because involvement in it has been incurring considerable opportunity costs for them.[203] Therefore, the institutional influence of Agro-Tech and Phone-Com appear to have created obligations for the three computer-shops, with little reward.

Ashraf's study (2010) on Tech4Agro, which focused on computer-shops located in other areas, considers these computer-shops as telecentres.[204] Although the three computer-shops in my case operate in a similar way to the computer-shops examined by Ashraf, I do not consider these to be telecentres.[205] I conceptualise telecentre with a developmental perspective, in the ways Gómez *et al.* (1999) and Madon (2005, 2009) do. They advocate for a broader and development focused understanding of telecentre. Rather, these three computer-shops are profit making commercial enterprises because they do not share common objectives such as education, economic development, social

[202] Phone-Com has over 500 information centres in different regions of Bangladesh, which are operated in a similar fashion.
[203] Opportunity cost indicates incurred loss when one alternative is pursued over other better alternatives, which could have incurred lesser losses.
[204] Telecentres are ICT equipped service providing establishments where access to ICT is facilitated, with the aim of developmental outcomes in the areas of education, economic development, social inclusion, and human development (Gómez *et al.* 1999).
[205] Some institutions in Bangladesh such as Bangladesh Telecentre Network (BTN) adopt a different view of telecentres. BTN conceptualises telecentres focusing only on the distributional aspect, instead of the impact aspect. It considers any organisation which takes ICT to the ordinary people across Bangladesh as telecentres, to which I do not agree with. I conceptualise telecentres in the way Gómez *et al.* (1999) do (see the previous footnote).

inclusion, and human development, which ideal telecentres would do (Gómez *et al.* 1999, Madon 2005, 2009). The computer-shops share agricultural knowledge for free only because of their involvement in Tech4Agro, and supporting the capability development of the member farmers through sharing e-learning based agricultural knowledge is an involuntary engagement of these computer-shops. The three computer-shops should not be confused with telecentres, which generally pursue economic activities in order to earn a profit rather than to foster developmental outcomes. Therefore, although Agro-Tech introduces these three computer-shops as e-learning centres, these are commercial enterprises that offer free information services on agriculture by utilising the Agro-Tech provided online knowledge repository.

5.3.2. Commercial arrangements in implementation

I discuss below how Tech4Agro is being implemented utilising the commercial arrangements among Agro-Tech, Phone-Com and the three computer-shops. I also discuss the knowledge repository of Tech4Agro, and describe the roles of the facilitators. I provide an account of how different actors are involved in implementing Tech4Agro (see Figure 5.4).

The three computer-shops started implementing Tech4Agro in a similar way. Although Agro-Tech received funding from Market-Aid till the mid 2013, it did not have to invest any money or arrange any training to engage the computer-shops with Tech4Agro. This is because it also has engaged Phone-Com as another fund provider and implementing partner, which provides technical support by offering Agro-Tech with free access to the computer-shops. Prevailing commercial affiliation between the three computer-shops and Phone-Com offers Agro-Tech a ready ICT platform to utilise for free. Although funding from Market-Aid ended in mid 2013, Phone-Com and Agro-BD have been continuing their funding support. Agro-BD also provided information about pesticides, insecticides, seeds and fertilisers to be included in the online knowledge repository. As Agro-BD is the manufacturer of these products, this raises questions regarding the bias of such information. In addition to this top-down aspect with regard to the development of the knowledge repository, Agro-Tech also maintains a low level interaction with the technopreneurs and thereby with the context. Apart from developing the knowledge repository, most of the involvements of Agro-Tech in operating Tech4Agro are only with the extent of making institutional level commercial collaboration and business arrangements. Shamsu [PO11] admits that all he had to do to implement Tech4Agro

was linking the commercial institutions (Phone-Com, Agro-BD and Agro-Tech). It demonstrates that the implementation of Tech4Agro has been more of a commercial collaboration assignment for Agro-Tech, than an endeavour to work with rural people for their developmental gains.

The knowledge repository Agro-Tech has been using for Tech4Agro is also not fully its own creation, because Shamsu [PO11] managed the initial basic 'knowledge bank' from his previous involvements in a similar project with Market-Aid.[206] Agro-Tech further developed it through in-house development of the knowledge repository. Papiya [KC16], creator of the initial knowledge bank, admits that it was developed in a bookish manner following only a few relevant texts.[207] Agro-Tech later updated it with information from Agro-BD, local research organisations, and a North American [208] source. It then uploaded the knowledge bank on the Internet and linked that with a particular website for Tech4Agro. The knowledge repository contains agricultural information and related instructions in standard Bengali language. Although most parts of the repository are text-based, it also uses a few relevant images (though no audio-visual or video clips). Agro-Tech updates the knowledge repository only based on the queries from computer-shops, which the knowledge repository has not addressed. The three technopreneurs used to search in the online knowledge repository for available solutions to the agricultural problems respective facilitators used to convey to them. However, after the withdrawal of the facilitator support in the mid 2013, no member farmer has turned up to the technopreneurs for agricultural knowledge support.

Among the three computer-shops, only Gai-CShop and PC-Rang had facilitators. Dewan [PO13] and Rajekul [PO15] worked for Gai-CShop and PC-Rang respectively. Both of them were selected by respective technopreneurs. However, neither of them received any kind of training from Agro-Tech and they did not receive any formal contract for their work in Tech4Agro. At the time of employment, Dewan [PO13] was in his early 30s. He was not local to his working area (the neighbourhood of Gai-CShop), and was brought to the project by Milad [PO12], the technopreneur of Gai-CShop. Dewan [PO13] completed his twelfth grade education and did not continue

[206] The term knowledge bank is used by Shamsu, which perhaps informs his inherent presumptions on the banking concept of knowledge distribution which Freire (1970) criticises categorically.
[207] Papiya [KC16] used to work with Shamsu [PO11] when both were employed by Market-Aid. She now works for her own organisation which also works for ICT4D on agriculture.
[208] Shamsu [PO11] incorporated findings from a North American agricultural research project, which focused on the agriculture of North America.

studying any further. He lived about 20 kilometres away from his work area and travelled by motorbike. He carried passengers throughout this commute to compensate for the fuel cost he had to pay, which Agro-Tech did not provide. This expensive commute had a considerable impact on his work for Tech4Agro. He had a few friends in his work area and managed to reach some local farmers through his friends, to offer his service as part of Tech4Agro.

During his time at PC-Rang, the facilitator Rajekul [PO15] was 25 years old, a graduate, and was local to his work area. After his service as the facilitator for Tech4Agro ended in mid 2013, he has been trying to get a government job.[209] Unlike Gai-CShop and PC-Rang, Com-Rang did not have any facilitator support. Shayedul [PO16] admits that without any facilitator support he cannot manage his time to play the dual roles of computer operator and facilitator. The role of a facilitator, therefore, appears crucial if e-learning is to address the agricultural problems farmers face in rural areas.

In Tech4Agro, the main responsibility of a facilitator was to contact local farmers to register them as members of Tech4Agro, and then approach them to ask about their agricultural problems in exchange for free solutions. Facilitators did not have any schedule for contacting respective local farmers. They approached them on their way to work, or by visiting them at their houses. Both Dewan [PO13] and Rajekul [PO15] state that almost all the farmers they registered for this project were male. Registering new farmers as members was more profitable for them than accessing local farmers to ask about their agricultural problems. They were paid BDT10 (about £0.08) for registering each farmer as a member, in addition to their monthly BDT3000 (about £23.26) salary. Furthermore, there was no monitoring of their work from either the respective computer-shops or Agro-Tech, which offered them an easygoing work experience.

While the technopreneurs' activities under Tech4Agro are supported by ICT devices, facilitators faced a different reality. Neither Dewan [PO13] nor Rajekul [PO15] had any access to a computer or the knowledge repository of Tech4Agro, nor did they know how to operate a computer. Facilitators did not use any note taking measures or recording devices when talking with the farmers. They had to memorise the farmers'

[209] At the time of writing, Rajekul [PO15] was looking for work in local government. Jobs in the government sectors are popular among young people despite the fact that salary is lower than the salary offered by private sector for similar jobs. However, it is job security and resulting social reputation of government jobs which motivate young graduates to spend years, trying to get a government job.

problems and convey those to the respective computer-shop. Sometimes they would take photos of diseased crops, or of insects and pests using their mobile phones, passing them on to the respective computer-shops to see if there was any related information in the online knowledge repository. At times, when they could not understand farmers' problems, they would make phone calls, at their own cost, to connect the farmers with the respective technopreneurs, so that farmers could describe their problems directly. They would visit respective computer-shops for solutions to the problems presented by the farmers. If respective technopreneurs could not find any solution in the online knowledge repository, they would contact Agro-Tech by email for a solution. Agro-Tech would then contact its designated in-house experts for a solution and report back to the respective technopreneur by email. Upon receiving the solution, technopreneurs would relay that information back to the facilitators, who would in turn inform respective farmers. Throughout all these involvements, technopreneurs had no scope to earn money except for printing costs if any farmer requested printed information.

While this design of knowledge sharing service might not appear a complex process, all three technopreneurs and respective facilitators share a low opinion about the implementation plan and effectiveness of Tech4Agro. They all admit that farmers are not motivated to join in Tech4Agro in its current form, though they agree that farmers are keen to learn with the help of the Internet. Shamsu [PO11] also shares similar low opinion about the effectiveness of Tech4Agro, though he does not criticise the implementation of it. The descriptions above depict that commercial arrangements in implementing Tech4Agro pursues a top-down approach, and fails to effectively engage local implementing partners and target project participants, the rural farmers.

5.4. The Internet-Freelancing Case

The Internet-Freelancing case includes the personal initiatives of a computer enthusiast named Raisul [PO17]. His life experiences and the initiatives illustrate how e-learning, as a means of learning and developing knowledge, can minimise institutional dependencies and can support socioeconomically disadvantaged individuals to become Internet freelancers and graduate from their poverty situations.[210] Raisul's [PO17]

[210] Internet freelancing (also termed as eLancing) consists of three interlinked main elements: i) individuals or organisations who work as the demand side of microworks (small units of independent tasks that make a full work or a project); ii) individuals (sometimes small organisations as well) who work as the supply side of those microworks; and iii) websites that link these two groups (Aguinis and Lawal 2012). Internet freelancers are the individuals who supply these microworks. By Internet freelancers in this chapter, I only refer to the Internet freelancers who are experts in web programming.

experiences also demonstrate how this whole process of empowerment through e-learning is socioculturally negotiated.

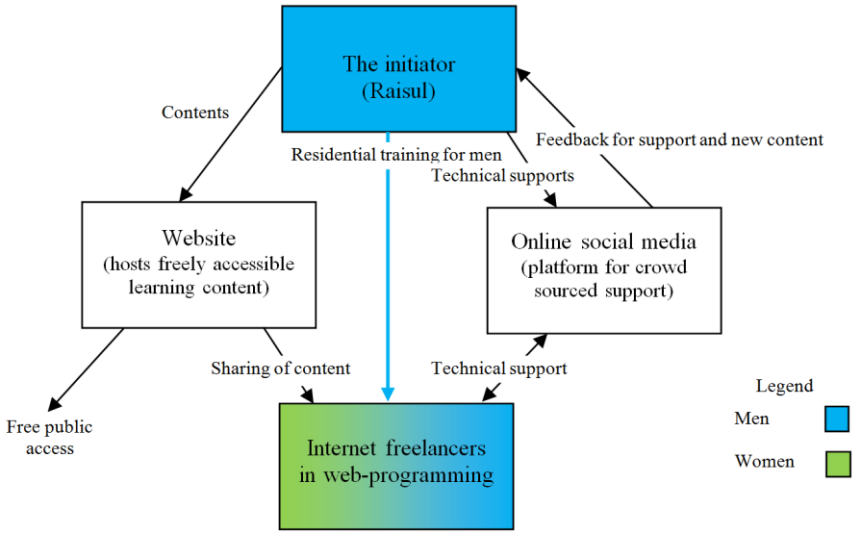
The Internet-Freelancing case focuses on Raisul [PO17] and his voluntary initiatives for Internet freelancers and local female students who are keen to develop computer operating skills. Raisul [PO17], who is known as an expert Internet freelancer, provides Internet freelancing enthusiasts with required skills support, particularly in the areas of web programming. He promotes Internet freelancing skills development through e-learning by providing text and real-life video clip contents on web programming in native Bengali language. He also offers free residential training on web programming in his remote village located at Kushtia, a district under the Khulna division. He organises computer training for local female students who study at a neighbouring high-school. Majority of the activities around his initiatives are managed by Raisul [PO17] himself, except the on demand technical knowledge support around web programming, in response to learners' queries, which is provided by expert Internet freelancers who use his content. These freelancers are connected over an online social networking site and offer voluntary support. Raisul [PO17] has been managing this demanding and critical technical knowledge support by utilising the crowdsourcing potentials in order to complement the e-learning experience of the users of his content.[211]

The following diagram (Figure 5.5) schematically shows how Raisul's [PO17] initiatives around e-learning work. It does not include the basic computing training initiative which he organises for the local female students as that initiative does not incorporate e-learning as a means of learning.

However, Internet freelancing includes a range of different expertise. In this chapter and throughout my thesis, by Internet freelancing I refer to Internet freelancing in the areas of web programming.

[211] Crowdsourcing is a model where online communities (sometimes termed as crowds) contribute their collective intelligence to any appealing online initiative (Brabham 2013). Reasons why contributors usually offer their time for this kind of involvement could be satisfaction, social recognition, economic gains, skills development or self-esteem (Estellés-Arolas & González-Ladrón-de-Guevara 2012).

Figure 5.5: Schematic diagram of the e-learning initiatives



This case involves Raisul [PO17], his brother Rabiul [PO19], his cousin Tanvir [PO18], and thirty-five residential trainees.[212] Using a biographical method, I discuss below an account of Raisul [PO17] and his surrounding realities to show how he has become an expert Internet freelancer, and how e-learning has played its roles in this regard.

5.4.1. E-learning, Internet freelancing and poverty reduction

Raisul [PO17] is a warm expert in ICT and Internet freelancing, who supports beginners in developing ICT related skills.[213] He is in his late 20s and lives with his parents, his wife, and his two younger siblings. He lives in a joint family[214], which is a common phenomenon in rural Bangladesh. He maintains a standard of living similar to that of his neighbours. However, his profession as an Internet freelancer sets him apart from his neighbours as most of them have little knowledge or understanding of the Internet. While his work as an Internet freelancer brings economic empowerment for him and his family, it also comes with concerns around social acceptance and recognition of his profession among his neighbours. He claims that this concern has a substantial impact on his wellbeing. In this way, Internet freelancing appears as a mixed blessing for Raisul [PO17].

[212] I use the terms 'trainees' and 'residential trainees' interchangeably, indicating the same cohort of the thirty-five respondents of my case who attended the residential training at the time of my data collection.
[213] A warm expert is the person who mediates the special knowledge required to use technology and the supports beginner users of that technology need (Bakardjieva 2005; Wyatt *et al.* 2005).
[214] It is a particular family structure where more than one generation live in the same household (Amin 1998).

Raisul's [PO17] endeavour to become a successful Internet freelancer was not smooth. Although since his childhood computer has been the machine of his dreams, the socioeconomic reality of his upbringing did not allow him easy access to that. His father was the sole provider and had to work hard to earn enough money to buy the basic necessities for his family. Raisul [PO17] had to sell paper bags in the local market to add some money to his father's inadequate income. He had little time to make friends or even to socialise with neighbours because he had to work every day to earn for his family. The work of making and selling paper bags resulted in irregular attendance at school. He was able to study at night, but he was often too exhausted and had to think of the next day's work. However, these difficult realities did not prevent him from learning basic computer operating. His determination and high motivation carried him through, and he started learning basic computer operating at a local computer shop, which was not an accredited training institution. He claims that his position, as a man, supported him in pursuing this unusual opportunity to learn, because women in his village are not appreciated to meet strangers outside their homes, let alone visit a computer shop and engage with ICT training on a regular basis. He states:

> "I was determined to learn computing. It (learning computer operating from a computer shop instead of a training institution) was unusual, but I could not afford going to town for it and paying training fees. I just wanted to start learning computer operating, somehow… I spent BDT1000 (about £7.75) for learning how to send an email.[215] They (computer shop operators) used to charge BDT200 (about £1.55) for composing and sending an email. I thought, that could be an option for me as well, to earn money for my family."

Raisul's [PO17] keen interest and motivation helped him to become an expert computer operator; not only can Raisul [PO17] make use of common computer and Internet functions he can also fix computers and troubleshoot software problems. In 2005, before he completed his own learning, he was offered a trainer position at the same computer shop. His initial pay was only BDT100 (about £0.76) per month for his teaching service. He then considered focusing on developing his career in technopreneurship, leaving the paper bag selling business behind. Later, he opened his own small computer shop with a poor conditioned pre-owned computer, which he bought with his accumulated savings. He managed a negligible amount of rent for that shop and started offering digital services such as emailing, Internet browsing and loading memory cards with digital content. He would spend a substantial amount of

[215] At that time (in early 2000) this amount was equivalent to the total cost of an individual's meals for a month, in his village.

time browsing the Internet to further his own learning, exploring anything that took his interest.

This quest for learning led him to e-books (electronic books) which opened a new avenue for him, empowering him to learn and develop knowledge in different areas through e-learning.[216] Through these e-books, he became aware of Internet freelancing and so he looked to learn web programming. This was in 2006, when web programming was not even taught at any of the training institutes in the cities, let alone in his remote village.[217] He could not afford the fees to attend any related training programme in the cities. As a result, self-directed e-learning came out as the emancipatory means for him at that time. He would search for online forums, discussion pages or any website, in order to learn web programming.[218] It was a difficult task for him as the learning process was unorganised. There was no formal initiative on Internet that offered well organised content on web programming for learning purposes. There was also no relevant learning content in his native Bengali language, which made his learning experience even more challenging. However, he overcame these obstacles through will power, dedication and hard work. He eventually learned several programming languages required for web programming, solely by means of self-directed e-learning, with the help of free contents on the Internet. He started working as a professional Internet freelancer in 2008. In 2009, he became an operator at a UISC[219] near his village, but later he left that job to devote all his efforts to Internet freelancing. He has been learning new programming techniques to update his knowledge and skills in the areas of web programming; again, these skills have been gained solely through the use of self-directed e-learning. Gradually he has become a trusted Internet freelancer by means of his reliable performance as an Internet freelancer. He has also started a joint venture in online marketing with an Australian business partner. However, he has been managing all his activities while remaining in his village. E-learning and Internet freelancing have empowered him not to follow the trend of migrating to cities for job hunting, which is a common practice among educated young men in rural Bangladesh.

[216] E-books or electronic books are verbatim copies of books in digital file format. Generally, the whole book is digitised into a single file that can be downloaded or opened with specific software to read that on the screen.
[217] Raisul claims that training courses on web programming were introduced in the capital by private institutions in 2011. However, GoB has no similar initiative in this area.
[218] Forums are websites which facilitate long discussions on different issues among respective online users.
[219] UISC is a government initiative which offers digital services with the help of computer and the Internet. The UISC centre is jointly operated by two local technopreneurs.

Raisul [PO17] shares that he is indebted to Internet freelancing for his economic empowerment. He also expresses his gratitude for the inspiration he received from a government high official in his locality without which he claims he would not become who he is today. Hard work, motivation and e-learning appear to have empowered him, and aided him in developing capacities to change his challenging realities. He now earns around BDT350,000[220] (about £2713.18) per month, where approximate average yearly salary is BDT45,000 (about £348.84) in rural areas (Hossain, Haque & Haque 2015). He has been able to earn this money while living in his village. This income now allows him to live in a three storied brick built building, which is the tallest building in his village. In rural areas, a brick built building is considered a symbol of social status and prestige. This demonstrates that Internet freelancing has increased Raisul's [PO17] standard of living. It might appear that he built the building only to increase his social status and prestige. However, this is not the case. As well as living there, he uses his building to offer free training in Internet freelancing and basic computer operating. The unfurnished stairs, floors and roof of his building show that it is built for necessities and not for luxury. During my data collection period, I would often find groups of young learners working or discussing their work inside the building. However, the atmosphere inside the building does not match the reality found in the wider neighbourhood, which Raisul [PO17] finds demotivating.

Although Internet freelancing has allowed Raisul [PO17] to connect with people from around the world, the neighbours in his own village do not have warm relationships with him. Tanvir [PO18], one of Raisul's [PO17] cousins, who helps him with managing the residential training he offers, confides that most of Raisul's [PO17] neighbours envy him for his economic gains, while many even do not have any clear idea about his work. Raisul [PO17] comments that most of his neighbours only know that a group of men visit his home and stay there for months for some work, but they do not know what the work entails. He argues that even some of the parents who send their daughters to attend the basic computer training, do not have a clear idea about what Raisul [PO17] and his residential trainees actually do. He recalls:

> "Once they (neighbours) spread a rumour that I have got AIDS (a disease that also brings social stigma in Bangladesh) and that is why I never get out of my home. You know, I do my work at home but they think men's work is outside

[220] His per month income (BDT350,000, about £2713.18) is over thirty-six times the average rural household income (BDT 9648, about £74.79) in Bangladesh (BBS 2011).

> home, so they keep making stories. They don't accept me or my profession very well… These hurt me every moment."

Internet freelancing as a profession can therefore be seen to challenge the perception of a gendered division of work. Not only have Raisul's [PO17] neighbours not endorsed his profession as socially acceptable, but his initiatives have also made him an enemy to the local commercial enterprises that deal in computing training. This enmity developed because Raisul [PO17] offers free computing training and computer related technical support, which impacts the business prospects for those commercial enterprises. He states that he was even physically attacked by some of the owners of those commercial enterprises. He claims that he has been fighting against all these odds by means of his willpower.

Raisul [PO17] believes that developing awareness among rural people about the advantages of the Internet and Internet freelancing can change their approach. He believes that this awareness will facilitate continuing his initiatives in his village, and can also benefit some of the local families, allowing them to increase their income through Internet freelancing in the same way it has been benefiting his own family. Although he is happy with the way users of his content have accepted his initiatives, he is keen to get social acceptance of his initiatives among local people. He argues that media, such as television and newspapers, might help with awareness development among his neighbours as well as other people in this country who do not know about the prospects of Internet freelancing. He argues:

> "I reach people around the world on Internet and they also contact me. However, media of this country hardly reaches this remote village. As if, we (Raisul [PO17] and his villagers) are disconnected in this remote village. … Once a newspaper made a feature on my work and that helped me with a bit of recognition in my village… It's frustrating that local people do not appreciate and support what I have been doing for others. I think media (television and newspapers) can build awareness among people about Internet and freelancing (Internet freelancing), and that can change their perception about many related issues."

Although Raisul [PO17] understands the nature of the media, he also believes that media has got the capacity to develop awareness among rural people to foster an informed approach towards the Internet, and aid social acceptance of Internet freelancing as a profession.

Raisul [PO17] argues that substantial economic gains through Internet freelancing have changed his social realities to some degree, in spite of the social denials of his initiatives and his profession. He claims that although his neighbours and relatives used to look down upon and avoid his family because they were poor, some of them now have changed their approach. He argues that this happened only because of his income, resulting empowerment and wealth. However, this economic empowerment could not bring the extent of social recognition for him and his family, which he expected. He has now started to pursue a Master's degree at a local college, sacrificing the opportunity for earning more money through spending time for Internet freelancing. This appears to be motivated by the need for social recognition, as in rural Bangladesh people with higher education receive social esteem and are ascribed with higher social status. He acknowledges that this postgraduate degree is not going to add any value to his profession or increase his income opportunity. However, it is his conviction that this academic achievement would bring social esteem and uplift social status for him and his family.

E-learning, therefore, appears as an emancipatory means for Raisul [PO17] in developing competencies in Internet freelancing. Although Internet freelancing eventually brought him economic empowerment, it appears evident that economic empowerment can only foster wellbeing when it is socially justified and conforms to situated sociocultural values.

5.4.2. The voluntary initiatives

Here, I discuss about the initiatives Raisul [PO17] has been managing with the help of his family members. I also discuss about the voluntary technical knowledge support on web programming, provided by some experts through crowd sourcing. His initiatives mainly focus on skills building in web programming for Internet freelancing purposes. However, these also include basic computer operating training for local female students who study at the high-school. While his initiatives around web programming involve both online and offline engagements, the computer operating trainings are conducted offline only.[221] I categorise his initiatives into online and offline, and discuss about these below.

[221] Offline implies physical reality which is not on Internet or any other virtual network platform.

Raisul [PO17] is mainly well-known for his online initiatives, which promote web programming skills development, with the help of his video and text content in Bengali. In 2012, he started his online initiatives soon after he became an expert Internet freelancer. These initiatives engage two different web platforms: his personal website and a popular online social networking site. On his personal website, he offers freely accessible and downloadable video and text content on different web programming techniques. He uses the online social networking site to offer opportunities to join in discussions and to get on demand expert technical support on related different issues, so that learners might have an accomplished learning experience through e-learning. Raisul [PO17] comments that he initially introduced his initiatives targeting young ICT enthusiasts in rural areas in order for them to resolve their poverty situations through income from Internet freelancing, without migrating to cities. However, his content is freely available on the Internet and can be accessed by anyone.

Raisul [PO17] designs and develops all the content by himself. He has also been maintaining his own website and his page on an online social networking site, without any assistance from anyone. [222] He claims that he designs his content in such a way that learners do not face the problems he faced while developing his skills on web programming through e-learning. For instance, he learned web programming in an unorganised manner due to a lack of guidance and organised content, but while designing his content he follows a pattern so that learners do not face similar difficulties. He states:

> "Instead of explaining how to do things (web programming), I simply demonstrate how to do those in my video contents. I also provide written details of those but only written guidelines cannot always help because those need the reader (learner) to be an expert, in order to be able to imagine simultaneously. It is difficult. I simply demonstrate different steps by performing. Those who follow my contents also tell me that they like this way of learning."

Although web programming usually requires working on the computer screen, which does not require considerable physical movement, it does involve different mental interactive processes, following particular patterns. Raisul's [PO17] residential trainees claim that his video clips allow them to watch every step of the programming process,

[222] Website maintenance refers to the background technical maintenance tasks, such as updating the server machine and software, configuring related devices and other related activities which go behind the visible changes on how things appear on the webpage.

when they follow the respective content on the computer screen. They argue that these real-life video clips fulfil the role of a demonstrator for them, which a related text cannot do.

In his content, Raisul [PO17] also addresses the issues around language, reflecting on the related difficulties he faced when he learnt web programming skills by means of e-learning. He comments that all the web content he followed through e-learning was in English, and this slowed down his learning process and made his learning difficult. This challenging experience motivated him to develop all his content in Bengali, so that users of his content do not face language related difficulties throughout their learning process. This characteristic of his content is appreciated by all thirty-five residential trainees. Akmal [BC64], a graduate student trainee, shares:

> "I could not afford extra time beyond my studies to attend any web programming course at any training institution. My dream was to study computer (degree programme related to computer science), particularly web programming, but due to extremely competitive admission and limited opportunities, I could not attend any related programme at my university. His (Raisul's [PO17]) initiatives offered me an opportunity to fulfil my dream. I can now learn from his contents whenever I can manage free time. It is also in Bengali which makes the learning even more effective and faster."

Therefore, it appears that e-learning is considered by these trainees as an emancipatory means for learning, empowering them to pursue a course of action that they value, transcending the institutional barriers.

Although Raisul [PO17] alone controls most of the processes in all his initiatives, he also reflects on the needs of the learners who pursue e-learning following his content. To receive comments on his content, he has provided a function for learners to leave comments on his website. Learners leave comments on the problems they face while following his content, as well as suggest new content on topics they want to learn. Raisul [PO17] reflects on those comments and produces new content to meet the learners' demands. In order to address learners' queries faster and in a more effective way, he has created a page on the online social networking site and invited all who expressed an interest to follow his content as members.[223] Members use this page as a

[223] A page here refers to a webpage on a social media that the creator of the page can update and control. It might be accessed by anyone but only members of this page (which can be called a group) can leave any comment on it.

platform to present their web programming related queries and to discuss anything related. As a result, this page also works as a platform for discussions. He has formed a seven member team to offer dedicated technical support to learners.[224] Raisul [PO17] claims that the page has now developed to a point that if anyone leaves any query on the page then many other members, beyond those seven, promptly respond to that with respective solutions. Quite often these dedicated members do not need to contribute as other members spontaneously respond. It shows that a benevolent culture of supporting others through sharing knowledge is operating underneath this crowd support. His website and crowdsourcing support on the page of the social networking site together offer an opportunity to learn web programming for anyone who understands Bengali and has access to the Internet, irrespective of her or his gender identity. In April 2014, the page on the social networking site had over 30,000 members and Raisul [PO17] claims that the number increases every day. Thus, it appears that Raisul's [PO17] model of e-learning is warmly accepted by Internet freelancing enthusiasts.

Inspired by the success of his online e-learning based initiatives, in April 2013, Raisul [PO17] started his offline initiatives. These offline initiatives include three-month residential training on web programming and non-residential basic computer operating training for female students who study at a local high-school.

The three-month residential training is offered to male web programming enthusiasts who have basic computing skills and who can pass the online recruitment test. Raisul [PO17] trains in groups of about sixty trainees. These trainees are usually somewhere between 18 and 55 years old and they come from around the country. They sacrifice their comfortable living to learn web programming, staying in Raisul's [PO17] remote village where life is challenging and lacks opulence. Initially Raisul [PO17] started this residential training initiative with four computers, which the trainees would share. Later, he bought over thirty computers and other essential accessories. Tanvir [PO18] claims that this residential training is becoming popular among those who are keen to develop web programming skills for Internet freelancing. Last time, 600 potential trainees competed for sixty trainee positions and it shows clear demand for this training provision. Both Raisul [PO17] and Tanvir also claim that this demand is increasing. As

[224] These members were appointed by Raisul, based on their dedicated contributions to support other learners. He never met any of them because all of them were appointed through online communications.

of April 2014, around 300 trainees completed this training and about half of them have been earning money as Internet freelancers in web programming.

Raisul [PO17] provides dormitory rooms for residential trainees within his building. He only charges for food and utility bills during their three-month stay. His mother prepares the meals for the trainees, three times a day. He claims that many female members of his social networking site express their keen interest to attend the residential training. However, he has no choice but to disregard those requests to comply with the conservative sociocultural norm in his village. In this regard, he shares:

> "How would women stay here for three months? There are social issues. Neighbours would start gossiping about them and would quarantine my family. I just can't allow women joining this training scheme. Local women might join in because they will not need to stay here, but not others."

As well as the social damage such an arrangement would have on his family, Raisul [PO17] claims that letting the women themselves would be at risk of social stigma. He also argues that there exists no considerable difference between learning web programming through following his online contents, with provisions for on demand technical support from expert crowd on the social networking site, and this residential training opportunity. While both approaches utilise the same online content and expert crowd based supports, the trainees do get Raisul's [PO17] direct face-to-face guidance. However, Raisul [PO17] maintains that the only differences are: firstly, trainees can spend dedicated time to learn in a group during these three months, and, secondly, they can improve their skills in communicative English for free, which he arranges with the help of one of his trainees.[225] He also points out that he uploads video recordings of all the sessions he conducts throughout the residential training sessions to ensure that learners, who pursue learning by means of e-learning, do not miss anything.

Raisul's [PO17] wife and younger sister train local female students in basic computer operating. Raisul [PO17] trained his wife and his sister, so that they can conduct these training sessions. He does not train these female students because of the conservative sociocultural values, which do not appreciate a man to teach girls unless that takes place at school. About twenty-five girls attend this training session in a group and they are always accompanied by one or two of their school teachers. The teachers accompany

[225] Raisul and his trainees use this term, communicative English, to imply business English.

these female students because without their participation respective parents would not allow their daughters to join in the training opportunity. Raisul [PO17] claims that the teachers also benefit from their participation because they also learn computer operating skills. He believes that teachers' indirect participation might foster a trickle down effect, and ultimately aid the learning of other students at the school.

The above discussions show that all these initiatives organised by Raisul [PO17] evidence his altruistic motivation behind promoting e-learning as a means of learning and developing skills.

5.5. Conclusion

These three cases represent diverse realities and different practical models of e-learning. Case one is developed around the central role-playing actors the cycle-women, who are local young women. After becoming cycle-women, they now benefit from e-learning by utilising their newly developed ICT skills. They provide rural women with paid ICT-based services and basic health check-up services. They also demonstrate digital content in the areas of health, agriculture, rights and entitlements to help rural women develop respective knowledge, awareness and skills. This knowledge sharing service is offered free of charge, but only during group sessions, and thereby for the group members. Cycle-woman's technopreneurship substantially depends on funding support and on the implementing local NGO. To the local people, the striking characteristic of cycle-women is that they ride bicycle to deliver their services, which goes beyond the contextual sociocultural norm.

Case two is developed around already established commercial setups of some selected computer-shops, which are involved in Tech4Agro by means of commercial affiliation. In this case, operators at the computer-shops advise local farmers on agricultural problems they face, based on the available information in a knowledge repository developed by Agro-Tech. This agricultural knowledge sharing by the operators was supported by facilitators, who would link local farmers with the operators, till funding from international development partners continued. Agro-Tech has been using the ready platform of the computer-shops for free, by means of the commercial affiliation between the computer-shops and Phone-Com, which is one of the fund providers. While funding from the two commercial enterprises still continues, but in absence of the

facilitators, the operators at the computer-shops get no farmer to serve with agricultural information.

Case three is developed around a computer enthusiast and his altruistic initiatives around e-learning for developing skills in web programming for Internet freelancing purposes. He has become an expert Internet freelancer exclusively through e-learning, and now earns good amount of money from Internet freelancing profession. He develops video and text based content on web programming and shares his content on the Internet for free. He has incorporated expert crowd support to offer the users of his content with on demand technical support, with regard to their related queries. All his content is in native Bengali language, which makes his initiative more effective. With the help of crowdsourcing, he has successfully been maintaining his e-learning model for the Internet freelancing enthusiasts.

Chapter 6
Findings and analyses: The Cycle-Women case

6.1. Introduction

In this chapter, I present the findings and analysis based on the data I collected from the Cycle-Women case. My analyses show that facilitator supported e-learning opportunities can help rural people pursue learning in order to achieve their wellbeing. However, it is not a regular phenomenon due to the practical e-learning model of this case being less attentive to incorporate how trust is prioritised by rural people while learning, particularly through a new means they do not have adequate idea about and how the type and relevancy of the contents can shape their acceptance of and participation in e-learning. My analyses also show that a predominantly top-down approach of implementation also affect the prospect for wellbeing achievement by e-learning. Despite engaging local women as the facilitators, the practical model of e-learning of this case also lacks ensuring social embeddedness of e-learning in terms of effective participation of rural women.

I discuss my findings below under nine themes and analyse my data using Sen's (1985) capability approach framework.

6.2. A predominantly top-down approach

In this section, I analyse the ways Tech-Net implements Tech4Women with regard to its non-participatory approach in developing the contents, strict control over access to the contents, profit making service design targeting those living in situations of poverty, and emphasis only on the high-tech ICT options out of nouveauness aspect of technology than the contextual fitness of it.

Tech-Net follows a non-participatory approach in developing the content it provides to the cycle-women to display on their laptop screen. The contents are digital in nature and cover different issues in the areas of agriculture, non-agricultural economic sectors, health, education, government supports for people living in disadvantageous situations, and citizen rights based on the RTI Act. Tech-Net does not develop the content on its own and it depends on external sources for supply of content. In most cases, content is developed by a commercial content developer and sometimes collected from other institutional sources such as NGOs. Throughout the process of content development, the

content developer consults only with Tech-Net, underestimating the context specific views rural people have on what the content should focus, how the content should look, or what type of content should be developed. Thus, the knowledge encoding process Tech-Net has been pursuing excludes contextual views, risking the effectiveness of the content. All five cycle-women also argue that topics within the content do not always meet their group members' expectations. In this regard Saleha [BC1] claims:

> "They (group members) want new videos (contents), on different issues; poultry, local opportunities for work. I also informed Nijer-Kaj about these but it has been about a year and I have not received anything from Tech-Net."

In a similar manner, members of Saleha's [BC1] and Jayantika's [BC18] groups (S2 and JR respectively) state that they want new content around different issues which are not addressed by the content the cycle-women use.[226] For instance, they demand content about: the health issues that aged people face; poultry diseases about what they do not have adequate knowledge about; and skills training which can help them take up locally available economic opportunities. Therefore, existing contents are not meeting cycle-women's service users' particular demands adequately. It also shows that there exists a supply side limitation around context specific content.

Not only cycle-women's contents fail to cover all the areas their service users want to learn about, but some of their contents also fall outside service users' cultural context. For instance, Soheli [BC2], one of Saleha's [BC1] service users, argues that she finds Saleha's [BC1] content about the practices around how to bring up children quite difficult to follow. To Soheli [BC2], the content advocates new practices, rather than the traditional situated practice they follow, and is therefore of little value to her. She states:

> "We (mothers belonging to this community) do not bring up our children like that. It is not our culture (customary practice). That is not what we have been practising here through generations…We just watch her videos but ultimately do what we have been doing since decades."

[226] I met fours groups of service users who receive support from three of the five cycle-women I interviewed. Two groups are served by Saleha [BC1], each consisting of ten and fifteen members, which I name S1 and S2 respectively. Jaynab [BC24] serves a group of ten members, which I name JN. Jayantika [BC18] serves a group of five members, which I name JR.

It shows that content which challenges the customary practices is not always warmly accepted by rural people, irrespective of its merits, and thereby is not effective. The non-participatory approach in developing the content can be argued to have contributed to this confrontation.

The content development process excludes not only the cycle-women and their service users, but also the respective professionals or academic experts. However, Raihan [PO3], head of the Tech4Women project, admits that guidelines from academics could have been beneficial for Tech-Net to get better quality content. Bhattacharya [KC18], the development economist I interviewed, also emphasises that academics and the wider knowledge community must play a bigger role in the knowledge encoding process for e-learning, and respective rural people should also be involved in it.[227] He argues that if knowledge communities are involved in the knowledge encoding process then the politics of knowledge development and its encoding process might be minimised because it can be expected that nothing would go unchallenged. The existing approach of Tech-Net towards knowledge encoding, as part of the content development, can therefore raise issues around source credibility of knowledge (Stehr & Grundmann 2011), which can be attributed to its top-down implementing approach.

Now I discuss how Tech-Net has been imposing strict control over access to the content it provides to the cycle-women. Tech-Net ensures that the content it provides is used exclusively for Tech4Women. The content is not available on Internet for public access. Tech-Net maintains a controlled access to the content within a closed network of users comprising the cycle-women and designated Nijer-Kaj staffs. The cycle-women can access the content on their laptop whenever they want but providing they have access to Internet. However, their group members can only view the content during the courtyard meetings scheduled by Tech-Net. Thus, there is no scope for group members to watch content repeatedly even if they desire to do so, due to the schedule imposed by Tech-Net and the strict control over access it pursues. In this regard, Saleha [BC1] comments:

> "No one so far has requested any repeated demonstration. They (her group members) do not know laptop so they also never wanted to save copies of these contents either. Well, they can't even do that even if they have laptop…Our contents are not available anywhere. They can only watch these contents from my laptop."

[227] Knowledge community includes researchers, academics, professionals and educated intellectuals.

Although no requests for repeated demonstrations of any content might raise concerns about whether the content is significant or not, strict control over access to the content calls into question the effectiveness of the closed system for learning. Limited and controlled access to the content shows that the intention to offer opportunities for learning and developing knowledge through e-learning is only for the members of Tech4Women. This can be attributed to the top-down approach of Tech-Net, which is also evident in its profit making service design, targeting those living in situations of poverty, about what I discuss below.

The profit making service design, imposed by Tech-Net, confronts two issues: rural people living in situations of poverty are not keen to pay for the services cycle-women deliver, and engaging Nijer-Kaj against its institutional ethos around profit making creates confusion among rural people. Both the issues lead cycle-women to face difficulties with their technopreneurship. The paid service option for income generation is not prospective in the rural context, given that majority of the rural people live in poor financial condition and thereby they prioritise their expenditure on their everyday essentials than on the services cycle-women provide. In this regard, Jaynab [BC24] shares:

> "Sometimes I feel sad as I can see that they do not have money to pay for my services. Then I need to waive or minimise my service charge but I also need money. It is a complex situation."

The situation depicted above shows low prospect of cycle-women's technopreneurship in the respective rural context, due to low income from it. Regarding the prospect of cycle-women's technopreneurship, even officials at Nijer-Kaj also shares low opinion. Ashit [PO5], the previous in charge of Tech4Women at Nijer-Kaj, also associates cycle-women's inconsistent and low income through their technopreneurship with rural people's poor financial condition. He argues:

> "I feel that they (cycle-women) should have a safe and stable income source. For example, Saleha ([BC1]) has her small shop. It balances her low income from her technopreneurship but other cycle-women do not have similar provision. It (low income) puts them into difficult situations in terms of earning and keeping money from that for repaying their bank loans."

Above views from Nijer-Kaj and the cycle-women show that the profit making service design of the technopreneurship, imposed by Tech-Net, is not appropriate in the existing rural context where the cycle-women work.

The profit making service design can also be criticised, because involvement of the non-profit organisation Nijer-Kaj in Tech4Women, makes it difficult for the cycle-women to earn through offering their paid services. All five cycle-women argue that they faced conflicting relationships with their service users in the beginning of their technopreneurship. It took them about six months to reduce the conflict in these relationships. In this regard, Saleha [BC1] states:

> "It took over six months to minimise confusion among them (service users). Every time I faced a new service user, it (the confusion) was something which was unavoidable…. Poor people usually get free services from NGOs. So, in the beginning they also did not want take our services by paying us."

As can be seen here, although the service design from Tech-Net enables the cycle-women to earn money, it also puts them into inconvenient situations. The confusion Saleha [BC1] refers to developed because the cycle-women were introduced to their respective group members by Nijer-Kaj, which led them to believe they were employees of Nijer-Kaj.[228] As a result, when the cycle-women started offering paid services to their group members and other neighbours, the approach went against the institutional ethos of Nijer-Kaj. Since the mid-1980s, Nijer-Kaj has been offering free support to its neighbouring local communities who have been living in situations of poverty. This established image of Nijer-Kaj among cycle-women's service users led to this conflicting relationship. In this regard Ziniya [PO1], the acting in charge of Tech4Women at Nijer-Kaj, argues that:

> "Local people think that as cycle-women are working with us, so, they must be NGO staffs. However, cycle-women are independent entrepreneurs (technopreneurs), though in reality they are not truly independent because we control them in many ways…They (inhabitants) think that as cycle-women are working for us so they should get free services as they have been receiving free services from Nijer-Kaj and other NGOs."

[228] Champa, one of Saleha's [BC1] group members, comments on how rural people perceive cycle-women: "They (cycle-women) are the people with computer, (who) work with Nijer-Kaj. They can measure our (group members) blood pressure as well. They have connections to local government offices through Nijer-Kaj." This view shows that Champa, and many others, are tempted to think that cycle-women are employees of Nijer-Kaj, due to their particular institutional affiliations with it.

This shows that the involvement of a NGO with a non-profit ethos in implementing Tech4Women, which targets those living in situations of poverty but promotes profit making exchanges, might create conflicting relationships among the service providers (the cycle-women) and their service users. Therefore, there are twofold concerns: whether a profit making approach towards ICT4D is appropriate and whether local NGOs or non-profit institutions should be involved in implementing a profit oriented initiative. Although some scholars such as Prahalad (2010) argue in favour of profit making initiatives targeting at those living in situations of poverty, this case demonstrates that initiative with a profit-making motive that engages NGO in its implementation, might not bring considerable prospects in this regard.

Now I discuss about cycle-women's service users' preference around ICT and the motive which drives Tech-Net to select ICT options for Tech4Women. Tech-Net promotes high-tech ICT options through Tech4Women, using computer and Internet as the technologies behind its e-learning initiative. However, cycle-women's service users are more inclined to adopting low-tech ICT options against the particular way the high-tech ICT options are incorporated in Tech4Women. Television is their most preferred ICT option mostly because television programmes offer dual sensory appeal and they can operate it on their own. However, users of radio remember using it as an integral part of their everyday life. Asiron [BC25], one of Jaynab's [BC24] group members, shares:

> "The era of radio is over. People now do not use radio…Maybe because mobile (mobile phones) is now available, though mobile does not provide all those good things (awareness, skills and knowledge development supports) that radio used to give us. We miss radio badly; it was a useful learning tool. It is not even sold in the market now."

Asiron's [BC25] view evidences what Freeman (2000) argues, which is that the new wave of technology washes away the options to access services that the old technology used to provide. Declined supply of radio[229] and its impacts can be linked to Selwyn's (2011) criticism that market mechanism sometimes influences development in an unexpected way. Despite popularity of mobile phone, the globally acclaimed multipurpose ICT (OECD 2004), its use is usually limited to calling purposes,

[229] Only two of all these group members know that some mobile phones offer access to radio services but they are not keen to access radio services through mobile phones because they find the process complex to follow.

particularly in rural Bangladesh. In this regard, Shuma [BC26], one of Jaynab's [BC24] group members, claims: "There is actually nothing very useful in mobile phone except calling." Among the ICT options, computer and the Internet are the ones rural people have the least idea about. Most of them even do not associate it with their lived realities. Julekha [BC21], one of Jayantika's [BC18] group members, argues:

> "Those (computers) are for offices, people working at offices generally use computer. What will we do with that? Jayantika ([BC18]) uses computer (laptop) in front of us (group members) to share information…(We) have heard that many things can be done by computer but we (group members) don't have any clear idea on this."

In spite of the existence of multiple ICT options and rural people's limited understanding of high-tech ICT options, Tech-Net promotes computer and Internet based e-learning opportunities. However, it does so with the help of local facilitator which helps rural women overcome their literacy barriers and their lack of ICT skills. Nonetheless, the motivation behind using high-tech ICT options raises concerns around the level of priority Tech-Net assigns to the consideration on the contextual fitness of the ICT option they select. In this regard, Raihan [PO3] states that when selecting ICT options for Tech4Women, Tech-Net considers availability, global image, and nouveauness of respective options. He shares:

> "Tech-Net initially tried to utilise palm-top when that became available in the market as a new technology, but ultimately it failed to continue…[230] In a similar spirit to incorporate new technology with nouveau global image, it tried to replicate what some organisations in Africa were doing, and also took initiatives to engage two of world's biggest technology giants, but eventually nothing worked out effective and sustainable."

It shows that while selecting ICT options for e-learning, Tech-Net prioritises factors other than convenience and affordability of its target people, or the meanings they associate with those ICT options. Therefore, it can be argued that Tech-Net only marginally considers the contextual fitness of the ICT options while selecting ones for Tech4Women.

[230] Palm-top is a tab-sized mobile phone like device.

The above discussions evidence that Tech-Net demonstrates pursuing both mandatory and administered approaches while implementing Tech4Women, which Chambers (2005) identifies as characteristics of a top-down approach. Mansell (2014) also criticises that most of the ICT4D initiatives follow a top-down approach where control from the top dominates throughout the implementation of ICT4D. This dominating control can be considered as a barrier to freedom which is a fundamental criterion, as per Sen's (1985, 1999) capability approach framework, to achieve wellbeing. The consequences of this predominantly top-down approach of Tech-Net, which are discussed above, can be argued to limit the prospects of e-learning. Adopting Sen's (1992) conceptualisation of conversion factor, top-down approach can be considered as a negative conversion factor which can limit the expected outcomes of an e-learning initiative.

6.3. Dependency on funding

In this section, I discuss how Tech4Women is influenced by the availability of funding. I show how the availability of funding affects the operating principles of Tech4Women and influences the ways the cycle-women work.

In early 2010, Tech4Women had adequate funding support. As a result, Tech-Net did not have to introduce any mechanism to finance Tech4Women and the cycle-women did not feel any pressure to earn money through their technopreneurship. However, Tech-Net later stopped all support for about a year when funding support ended in 2012. In the second half of 2013, Tech-Net restarted Tech4Women but without any funding support. To compensate for the lack of funding, Tech-Net managed bank loans for potential cycle-women. International recognition of Tech4Women helped Tech-Net managing the bank loans. Although this loan now supports the cycle-women to purchase the required devices and tools, they experience constant pressure to earn as much money as they can. It is understandable that, under this circumstance, the cycle-women look to maximise their earnings. Jayantika [BC18] claims that with the need to make the repayments on the loan, the pressure for earning money is inherent. However, this motivation to increase income results in a complex relationship between the cycle-women and their respective service users, who have been receiving free services from Nijer-Kaj and other NGOs. In this regard, Fatema [BC30] states:

> "They (her service users) are poor people. They prefer not to pay us for our services. But I need money to pay my instalments, so I have no choice but to promote my services. I know it is difficult for them but I have no choice. Many of them have stopped contacting me to avoid paying me for my services, but I go to them to offer services because I need to earn money."

It appears that personal bank loan supported approach, which was introduced due to the end of funding support, has created a disadvantaged situation for cycle-women, affecting their social relationships with their service users and their financial conditions.

The underlying funding pattern of Tech4Women also affects the way the cycle-women undertake their work. All five cycle-women argue that they had to re-evaluate their service provisions in terms of earning potentials due to the new financing approach after the funding support ended.[231] Sometimes they have to overshadow the developmental intentions of their services in order to ensure income through their technopreneurship. With the exception of Saleha [BC1], the other four cycle-women had no choice but to prioritise income prospects because they needed to pay instalments from their everyday income. These four cycle-women claim that they still could not earn back the money they invested to become cycle-women. All five cycle-women argue that a decreasing demand for their services has made this situation even more difficult for them. Under these circumstances the cycle-women, Ashit [PO5] and Ziniya [PO1], express their profound concerns over whether Tech4Women can sustain any longer.[232] This anticipation is further intensified because under the current approach Tech-Net provides reduced support to the cycle-women through Nijer-Kaj. Realising the realities around Tech-Net's approach to implementing Tech4Women, and around the influence funding support can have, both Ashit [PO5] and Ziniya [PO1] claim that consistent funding support is essential for ICT4D initiatives like Tech4Women. Therefore, Tech4Women does not illustrate a self-sustained model of ICT4D, and shows critical dependency on the funding support. This leads to a considerable impact on the operating principle of Tech4Women and the prospect of the cycle-women's technopreneurship.

[231] Although Saleha [BC1] is not in the group of cycle-women who are under the pressure of instalments, she does not intend to miss the chance of earning more.

[232] In a study on the cycle-women but in a different area of Bangladesh, Asaduzzaman (2013) could not find any challenge the cycle-women face in their technopreneurship. However, he concedes that this positive outcome in his research might be caused by his particular research approach. He also expresses his concerns about the underlying challenges the cycle-women might have been facing, which he could not identify.

Considering the influence of funding on Tech4Women, it can be argued that in the context of rural Bangladesh consistent funding support can enable e-learning initiatives to convert e-learning into a means of learning for rural people. Therefore, according to Sen's (1985, 1992) capability approach framework, funding support can be considered as a conversion factor in converting e-learning opportunities into a means of learning through appropriate initiatives.

6.4. Authority lies in government

In this section, I show that rural people rely on the government and prefer it to be the implementer of the e-learning initiatives for the benefit of those living in situations of poverty.

In the existing implementing approach, the cycle-women have been the prime beneficiaries of Tech4Women. However, they believe that initiatives similar to Tech4Women should be organised by GoB because of its consistent and philanthropic approach to implementation of development projects. All five cycle-women express their concern that Tech4Women appears to them to be a temporary initiative, as there is no assurance of how long it will run and how it will operate in future, given the reality that it has already changed its implementation approach due to a funding crisis. Saleha [BC1] claims that she suffered considerably from the unexpected project closure for about a year after funding support ended. She also argues that she has been experiencing inconsistent support services from Nijer-Kaj and Tech-Net, due to the changing implementing approaches of Tech-Net. Saleha [BC1] claims:

> "If we (cycle-women) could get support from government that would be better because the government will never leave us behind. Now the support depends on the project. If there is no project, then there is no support for us."

The other four cycle-women also agree with Saleha [BC1], although they did not face the difficulties she did due to project closure, as they joined after that phase. However, they are aware of the inconsistencies Tech4Women has gone through. They think that the initiatives from GoB can make ICT, the Internet in particular, affordable to them. In this regard, Suporna [BC31] claims:

> "Internet is very expensive. I always need to watch how much data I have used up from my one gigabyte, every time I access Internet.[233] Government can do something if it wants. It has already given free laptops to schools. At least it can offer cheaper Internet to us."

It shows that price of Internet has considerable influence over cycle-women's Internet access and that, in view of Suporna [BC31], government involvement can facilitate convenient access to Internet. Although Tech-Net has engaged the cycle-women in Tech4Women, in reflecting on their experience of working for Tech4Women under Tech-Net, they argue that GoB would be better placed to organise similar ICT4D initiatives in rural Bangladesh.

The service users would also prefer GoB to take the responsibilities of implementing e-learning oriented ICT4D initiatives in rural areas. Sohili Khatun [BC5], one of Saleha's [BC1] members of group S1, shares:

> "They (Nijer-Kaj) are good, we all know them; but if government does (implements similar initiative) it, then it would be even better for us. We will get free services then…Corruption exists in the government but still government is the better choice for us."

As can be seen here, in spite of the allegations of corruption against the government, rural people would prefer to rely on GoB. The view above also indicates that rural people have conviction of the philanthropic implementing approach of the government. This approach reflects what Mazzucato (2013) also claims about the expected stance of the government in taking the responsibility of innovations, in order to safeguard and ensure the interests of its citizens. Considering greater interests beyond the institutional ones, Ashit [PO5] also argues that instead of project based initiatives there should be a government-led ICT4D movement, which he thinks might ensure more stable initiatives with free or cheaper services for those in situations of poverty in rural areas. He argues that for digital inclusion, the government should introduce ICT based services at village level but in ways that will encourage rural people to learn how to use ICT and develop related competencies. He argues:

[233] All the cycle-women use a 1GB Internet package, which is offered by one of the largest telecommunication operators in Bangladesh.

> "Once the (ICT) system is there, people will somehow learn how to use that and will eventually start using that. Scattered projects cannot ensure a permanent change. Government should come forward on this issue."

The above view from a development practitioner shows that government initiatives are appropriate for ordinary rural people in bringing a consistent change. It also shows confidence in rural people's competencies in adopting required ICT skills.

Although none of the cycle-women, nor their group members, or Nijer-Kaj staff claims that institutions such as Tech-Net or Nijer-Kaj should not implement similar ICT4D projects, they clearly state their preference for the government to get engaged and take on ICT4D leadership. Despite NGO involvement in development projects being a common phenomenon in Bangladesh, ground level implementing institutions and respective project participants believe that GoB should implement e-learning oriented or similar ICT4D initiatives to establish ICT4D as another platform for development initiatives (Banks & Hulme 2012). Therefore, it seems that authority or confidence lies in government. With regard to Sen's (1985) capability approach framework, government involvement can be considered as a conversion factor. This is because in the context of rural Bangladesh, rural people's trust in government can be argued to have the potentials to convert e-learning oriented initiatives into more acceptable and reliable initiatives to ordinary rural people.

6.5. Roles of Language

In this section I show how language influences knowledge sharing and knowledge development through e-learning. With regard to the Cycle-Women case, their group members depend mostly on their local language, which is different from the standard Bengali language used in the content. I discuss below the roles of language in making sense of e-learning contents.

Language in this rural area is not only a means for sharing expressions; it also carries sociocultural implications such as education status or a sense of community. Local people usually prefer to use local language, which is different from standard Bengali language. Use of standard Bengali language in this area is limited only within formal

atmospheres such as at schools and colleges, offices and some business places.[234] Roughly less than half the local population in this area are literate, which implies that more than half of the total population in this area do not know how to read or write in standard Bengali (GoB 2012). The cycle-women's group members do not understand the standard Bengali language fully and they consider it as the language of the educated people. They consider language as the primary criterion to conceptualise who or what belongs to their locality and represents their reality. For instance, whoever cannot speak their local language is considered to be an outsider or foreigner. They also claim that the language (standard Bengali) used in cycle-women's content makes them feel like it is for educated people and not for them. Therefore, use of standard Bengali, as the language of the content, appears as a less appropriate fit in the context of Tech4Women. However, they argue that the cycle-women help them make sense of the content, thereby helping to minimise the language barriers for them.

All five cycle-women understand both local and standard Bengali languages and work as the bridging agents by supporting their group members with the intelligibility of the content they demonstrate. The cycle-women are local to their work areas and are well accepted by respective group members because they speak the local language. I found that during courtyard meetings[235] group members pay more attention to the cycle-women's[236] explanation than to the audio embedded in the content. This is because the audio uses standard Bengali language whereas the cycle-women explain the content in a local language, which is more understandable to the cycle-women's group members. Mamata [BC6], one of Saleha's [BC1] group members, states:

> "We (local people) don't properly understand the language (standard Bengali language) of the educated people. Saleha [BC1] explains everything in our own language after reading those (content) on computer (laptop) and then we can understand. There are many words in those (contents) that we don't understand…It would have been very effective for us to understand if those (content) were in our (local) language."

It shows that use of local language helps cycle-women to make the concepts of the content more intelligible to their group members. Chambers's (1983) also emphasises

[234] Students at colleges usually start their 11th grade studies and then after finishing 12th grade they sit for Higher Secondary Certificate (HSC) examination.
[235] One was organised by Saleha [BC1] and another one by Jayantika [BC18].
[236] I attended courtyard meetings conducted by Saleha [BC1] and Jayantika [BC18].

the importance of choosing appropriate language to facilitate rural people's understanding. Therefore, the cycle-women as the local language speaking agents have been playing effective roles in helping their group members making sense of what the content means. It can also be argued that when local languages are not used in the content, local assistance appears vital to support rural people's understanding.

Although the cycle-women have been the solution to language barriers for their group members, the cycle-women themselves need to make efforts to minimise the language barriers they encounter while trying to make sense of the content on Internet that are in non-native languages. They utilise both their Basic English language proficiency, and digital solutions to overcome the language barriers as most of the content they access on the Internet is in English, a non-native language.[237] The digital solutions they utilise include language translating software and dictionary software, both of which are available on the Internet for free. Language therefore does not prevent the cycle-women from accessing learning opportunities through e-learning. The cycle-women learned how to use these software applications from Kishor [PO7], the ICT support manager at Nijer-Kaj. They also learn about different uses of the Internet and other utility software from their young male neighbours who study at schools and colleges. Saleha [BC1] recalls:

> "One day I was searching a Bengali topic on Google but could not find that. I shared that issue with my younger brother who studies at a nearby high-school. He got me the solution within a few days from his friends at school. It was a website named *Pipilika*.[238] I use it when I face any trouble with searching something in Bengali."

This illustrates that students, to some degrees, bridge the knowledge gaps in ICT among rural people. Jaydeb, the computer teacher at the nearby *Kalkini* high-school, argues that schools and colleges in the local areas act as the source of information about the Internet and different software, which then spreads, mostly through male students. These students and the cycle-women together (or local assistance in a single term) can be thought of working as a conversion factor (Goerne 2010; Robeyns 2005) when Sen's (1985, 1992) capability approach framework is adopted. This is because they convert

[237] All five cycle-women have basic English proficiency as they all completed 10th grade education which is equivalent to O level. Two of them have also earned honours degrees as well.
[238] *Pipilika* is a Bengali search engine which was available from: http://www.pipilika.com/ (accessed 15/04/2015).

the Internet, which rural people usually associate with source of entertainment, into a means for learning and developing skills and awareness, which eventually can lead to an increased wellbeing for rural people.

Therefore, although language appears as a critical barrier for cycle-women's group members to benefit directly from e-learning, but educated and ICT skilled cycle-women, as the local support, minimise this barrier for them. The cycle-women help their group members to make sense of the content by offering explanations in the local language in order to enhance their understanding.

6.6. Influence of trust in rural realities

In this section, I discuss how notions of trust are negotiated around e-learning and the services the cycle-women offer. In order to understand the development of trust in e-learning, it is important to consider how trust develops in similar instances within the specific cultural context of this area of Bangladesh. In the following paragraphs, I first discuss how the cycle-women deal with the issues around trust and then discuss how their group members do the same.

To begin, it is important to note that none of the five cycle-women shares any concern with regard to trust in e-learning for learning and knowledge development purposes. I would argue that there are a number of factors that allow them to take this position. For example, their ICT skills, education, relevant knowledge and understanding, ownerships of ICT devices, and access to ICT offer them the confidence to verify any information they come across using the Internet. As Fatema [BC30] shares: "I can learn many things from Internet. Sometimes when I am confused about anything (on any topic) then I check that on other websites to be sure." Thus, competencies around ICT and education, and access to ICT appear to have enabled the cycle-women to think critically about information and seek to verify that information through the Internet. While Fatema [BC30] and the other four cycle-women are confident about their skills in crosschecking what they learn through e-learning, Jayantika [BC18] raises concerns about how to choose the best source of information online amidst abundant sources of related information. Jayantika [BC18] shares:

> "Sometimes we (cycle-women) find too many information. We face difficulty in selecting the best source on which we can rely on. I think sirs (teachers) at (local)

high-school might guide us in this regard on how to select reliable sources of information. They are learned and the most trustworthy people in this area."

As demonstrated here, although the cycle-women are educated and ICT skilled, they also want expert advice to be confident that they can rely on e-learning. They want to rely on local high-school teachers for expert advice. Therefore, in the world where boundless information and sources of information exist on the Internet, expert views from trusted local experts are felt essential, even by the ICT skilled educated cycle-women, in order to develop confidence in e-learning.

The cycle-women's group members face a different reality due to their limited ICT skills and limited access to ICT. All of them have limited understanding about ICT and the Internet. Almost all of them engage with technology at a basic level, for example operating the basic calling function of mobile phones and switching the television on or off. None of them have access to a computer or the Internet. They typically get ideas about ICT and their usefulness from children or local young male neighbours who study at neighbouring schools or colleges[239]. They think that computer and the Internet are generally used for official and entertainment purposes. They do not have adequate idea about e-learning and its application in learning and developing knowledge, skills and awareness. However, they have been learning agriculture watching television programmes since the early 1980s without recognising the inherent provision for e-learning. Unlike the cycle-women themselves, their group members encounter different realities which can be argued to influence them developing trust in ICT and e-learning. This is largely due to their lack of familiarity with different e-learning options and lack of adequate understanding of computer, Internet and their probable uses around e-learning.

It has emerged through my research that notions of trust around e-learning are negotiated by the cycle-women's group members through their interactions with the cycle-women.[240] I find that two issues appear influential in this regard: firstly, the cycle-women use a new means (e-learning) for learning and developing knowledge, which their group members have no previous knowledge of, nor do they have the required ICT devices or required access to those, without the help of cycle-women. Secondly, instead

[239] Only one woman among all the group members I interviewed has competed a10th grade education.
[240] This includes group members led by Saleha [BC1], Jaynab, and Jayantika [BC18].

of the cycle-women, their group members customarily rely upon the respective local experts they trust in because of their socially shaped and accepted roles as expert trust anchors in the areas of health and agriculture[241]. I discuss below how e-learning addresses these issues when the cycle-women promote it as a means for learning and developing knowledge, skills and awareness in the areas of health, agriculture and entitlements.

My findings indicate that group members typically rely on health professionals and do not rely equally on the cycle-women for their health related support. However, they do use the cycle-women's services in situations when they wish to stay at home. Local health professionals are familiar figures to rural people and are also trusted by them for their respective expertise. However, the cycle-women are not known to their group members as experts in health profession. This particular aspect of cycle-women's social identity influences their group members, in trusting their related services. For instance, Saleha [BC1] argues that all five cycle-women had to buy expensive digital blood pressure measuring devices, instead of the cheaper ones that all the local health professionals use, because group members do not trust their blood pressure measuring skills. She shares:

> "Initially, I used the normal device (commonly used cheaper blood pressure measuring device) that doctors (physicians) use at the pharmacy, but they (group members) used to distrust me. They wanted to be sure of my measurements. Then we all (cycle-women) had to buy the new expensive digital device. They can now see the measurements in digits."

It would appear through this exchange that rural people do not seem to have any initial trust in the cycle-women with their health check-up skills. This could be argued as a consequence of their multiple roles as knowledge brokers in diverse areas of speciality. The cycle-women's social identity, which does not conform to that of a health professional, might have caused this distrust. These notions of distrust might also have an influence on the cycle-women's group members' acceptance of the knowledge shared by the cycle-women through their health focused content.

With regard to agriculture, cycle-women's group members usually consult with their trusted local expert farmers to learn new techniques or to discuss any agriculture related

[241] Majority of the content the cycle-women use is in the areas of health and agriculture.

problem. Expert farmers demonstrate agricultural techniques in front of them and they learn from observing those demonstrations, or by performing these techniques themselves. Therefore, they usually learn from observation and/or by doing. They also learn agricultural techniques from particular television programmes produced by Meraz [KC2], who they trust for his effective programmes. It can thus be argued that they develop agricultural skills through informal means of learning, either with the help of local trusted expert farmers or through television programmes. In this reality, the cycle-women's e-learning approach appears to confront their group members' usual learning practices, which are embedded into trust relationships. When the cycle-women share content on agricultural issues, their group members are confronted by a cycle-woman, who they know as the person with a computer and with blood pressure measuring skills, talking about agriculture. They are also confronted with a laptop, rather than a trusted local expert, demonstrating agricultural farming practices through pictures and texts. Therefore, they have a lack of trust in the cycle-women, their e-learning approach, and in the knowledge, as it is presented differently to their usual learning practices; to this end, group members are not inclined to rely on the cycle-women's e-learning initiatives. Among the forty group members I interviewed, only Ambala [BC7] (a group member of Saleha's [BC1] group S1), could mention what she learned from the cycle-woman's e-learning initiatives. She claims that she learned the skills to detect whether vegetables in her kitchen garden are affected by insects or diseases. However, whenever she finds any trace of insect or disease, she consults with Parimal, a local expert farmer, for the remedies, instead of applying what Saleha [BC1] advised her to follow.[242] Ambala [BC7] shares:

> "I have been consulting with him (Parimal) on agricultural (homestead vegetation) issues since long. He is very expert. He has got government training. I fully rely on his advice."

Here, although Ambala [BC7] took the preventive measures by utilising the information Saleha [BC1] provided, she did not rely on the remedy advice offered by Saleha [BC1]. Therefore, what the cycle-women share on agriculture, works as a source of information for their group members but less so as enablers of knowledge development. This is due to a lack of trust in the form of e-learning the cycle-women pursue.

[242] Parimal is not one of Saleha's [BC1] service users.

The cycle-women's social and gender identities also influence their group members in developing trust in them and in the form of e-learning they promote. For instance, Saleha [BC1] once approached Kalim [BC4], an aged local farmer, with her content on agricultural techniques but she was not warmly accepted by him.[243] Referring to that event Kalim [BC4] exclaims:

> "These young girls (cycle-women), what do they know about agriculture? Our hair turned white growing crops, and now they want me to learn from them, and that even from machines (laptop)!"

This demonstrates that the socially constructed identity of the cycle-woman as the facilitator, along with a limited understanding of e-learning, have a substantial influence on the decision to accept e-learning as a means for learning and knowledge development.

The cycle-women also share information on entitlement with regard to government supports for those in disadvantageous situations. They offer guidelines to the group members, who qualify for those benefits, on how they might access them. A few cycle-women, such as Saleha [BC1] and Jayantika [BC18], also help their group members who qualify for these government benefits with processing their claims at the local government office. It is in this area of knowledge; rural people seem to rely on the cycle-women and the related content they share with them. For instance, after Saleha [BC1] successfully processed three benefit claims, her success stories spread among all her group members via word of mouth. Her group members now consider her as an expert on processing these benefit claims and they also consider the related content as valuable sources of information and learning. Three of her group members claim that all the group members believe that she has connections to local government office and they rely on her for this particular support.[244] This example illustrates development of trust through realised gains. Saleha [BC1] claims that now other local people beyond her group members also contact her for advice and support on claiming these benefits. It appears that non-group members have also started relying on her for help with this particular issue. This can be argued as an instance of the development of trust through

[243] Local people consider anyone above 50 as an aged person given the fact that life expectancy for women and men are about 60 years and 70 years respectively (Murray *et al.* 2015).
[244] These three group members are all below 65 years old, the qualifying age for government benefits, and at present they are not keen to apply for the benefit.

social relationships between her group members and respective non-group members. Granovetter's (1983, 1985) claim that trust is established through social relationships can be seen to hold true in this case.

The above discussions show that development of trust in e-learning depends on a combination of factors. The factors are: education, knowledge of ICT, ICT skills, ownership of ICT devices, access to ICT, realised gain, social relationships, and the social identity and gender roles of the facilitators. One important issue, which can considerably influence the development of trust in e-learning, is whether the concerned person who pursues e-learning is ICT skilled or not. In case of facilitator supported e-learning, social and gender identities of the facilitators appear more influential than their ICT skills, along with the perceived merit of the respective content demonstrated by them. Therefore, in e-learning, trust can be considered as an essential conversion factor as per Sen's (1985, 1992) capability approach framework (Goerne 2010; Robeyns 2005). This is because trust in the facilitator and/or in content can convert e-learning into an acceptable new means of learning and developing knowledge, skills and awareness. Therefore, trust, which Roberts (2000) also argues is a requirement for a successful transfer of knowledge, is an essential precondition if e-learning is to work as a means of learning and developing awareness, skills and knowledge for developmental outcomes.

6.7. Gender-specific approach and context specificity of the content

In this section, I discuss how the gender-specific approach of Tech4Women on one hand empowers the cycle-women, mostly in economic terms, through their technopreneurship, on the other hand demotivates their group members to follow the contents they demonstrate. The latter consequence takes place due to the lack of context specificity in the content, particularly the ones around agriculture.

Tech4Women has empowered the cycle-women by developing their ICT skills, which eventually enabled them to develop further skills and awareness through e-learning. These skills help the cycle-women to earn money through their technopreneurship. This economic empowerment eventually brings social empowerment for them in their respective families and societies. However, in the case of the cycle-women's service users, the empowerment scenario is different. The cycle-women's e-learning contents empower their group members only marginally. The contents around health and entitlements have a particular focus on issues that these group members find relevant for

their lived realities. These contents empower them in developing health practices without requiring them to visit health professionals. However, in case of the agricultural content, similar instances of empowerment do not take place. The reason being, the focus of the content is not coherent with the gender roles the group members are ascribed. In a gender specific manner Tech4Women promotes e-learning for rural women to share agricultural knowledge, but the characteristics of the content it promotes do not always reflect on what women usually do in their lived reality. The content focuses mainly on common agricultural issues, which usually male farmers face in the field, instead of those which relate to women's usual engagements in agriculture, such as post-harvest crop processing (Momsen 2004). For instance, although Saleha [BC1] claims that she taught her group members how to make organic fertilizer but I could not find anyone who followed her advice or are in a position to apply what she demonstrated. Mrinalini [BC8], one of Saleha's [BC1] members of group S2, argues:

> "I watched video on (how to prepare) organic fertilizer. I don't remember that well. I did not try it, I am busy with my infant kids all day and then, I also take care of the cattle. My husband actually does agriculture and he is always out in the field. It rather would have been helpful for him."

This reveals a mismatch that exists between the topic of the content and the context, with regard to the areas of knowledge rural women feel are important for them to learn about, or are relevant for them. This mismatch can also be thought of a consequence of the persisting patriarchal rural reality and gender roles which limits rural women's engagements within the households (Cain *et al.* 1979; Chowdhury 2009; Kabeer *et al.* 2011; Kabeer 1988, 1994, 1998). However, male farmers could benefit from this content if they were included as target project participants of Tech4Women.

Women in Bangladesh make up a significant portion of the total workforce in agriculture and in most cases their involvements are governed by the gender roles.[245] However, I found that their pattern of involvement in agriculture sometimes depends more on their geo-demographic lived realities than the sociocultural norms. For instance, I found that women on the island, unlike those on the mainland, are equally active in agricultural work at home and in the field. This is because in most cases their male family members remain busy at work on the mainland throughout the day. Keeping to

[245] A study (Rahman, S. 2010) found that women labour comprises about 28% of total agricultural labour.

the example offered above, while the cycle-women's content on how to make organic fertilizer could be beneficial to these women islanders, the cycle-women do not usually demonstrate this content during their visits to the island due to the challenging commute. They offer comparatively less services to the women islanders than they offer to the mainland women.

In the persisting patriarchy (Cain *et al.* 1979; Chowdhury 2009; Kabeer *et al.* 2011; Kabeer 1988, 1994, 1998), the gender-specific approach of Tech4Women can be problematic in a sense that exclusion of men might demotivate respective women from reflecting on what they learn from the cycle-women, at their household level. Exclusion of men in development initiatives for women is also criticised by Nazmunnahar [KC11], a senior academic and gender and development expert I interviewed. She argues that the inclusion of both men and women in development interventions is now essential for effective developmental outcomes, and it is even vital for ICT4D initiatives as these persuade new practices. Targeting only women in the patriarchal rural realities (Cain *et al.* 1979; Chowdhury 2009; Kabeer 1988, 1994 & 1998) might deserve appreciation for its intention but at the same time it appears to undermine the situated power relationships that work underneath and eventually affect the probable effectiveness. In addition to the gender-specific approach, it can also be argued that the context specificity criterion of the content also influences the effectiveness of the practical model of e-learning, which Tech4Women promotes. As context specificity of the content influences converting e-learning into a means of learning and developing awareness, skills and knowledge; it can be considered as a conversion factor following Sen's (1985, 1992) capability approach framework (Robeyns 2005). As demonstrated by Tech4Women, it can be argued that the lack of context specificity in the content affects acceptance of e-learning among rural people and demotivates them in adopting e-learning as a means of learning, and thereby affects their wellbeing achievement through e-learning.

6.8. Significance of the type of content

In this section, I discuss why a particular type of content is preferred by cycle-women's group members for e-learning, and how this corresponds to rural people's usual learning practices. Here type refers to the observable characteristics of the content such as visual or auditory aspects.

Although the cycle-women refer to e-learning for some of their learning instances, they also refer to informal social interactions as their most common and preferred means of learning. This is also referenced by their service users. I found that rural people on the whole, value the importance of learning more about agriculture, while rural women also value learning about household activities such as cooking, kitchen gardening, poultry and cattle rearing. None of them connects learning with formal education and it appears that learning to them is mostly learning about that which applies to their lives and livelihood (Chambers 1983). Anwar [BC3], one of Saleha's [BC1] three male group members among her twenty-five members, shares:

> "We (peer farmers) learned (agriculture) from observation. In our childhood we learned agricultural works by observing our parents and neighbouring farmers, and working with them. (We) learned by doing…We also used to listen to radios every morning, which was very helpful with valuable information, particularly around agriculture. Now we watch television (programme). It's even better because we can hear and watch at the same time."

While Anwar [BC3] learns through social interactions within and outside his home, and with the help of low-tech ICT devices, women in this area learn mostly from their families and/or neighbours. They thereby conform to their limited agency due to the persisting patriarchal sociocultural norms (Chowdhury 2009, Kabeer 1988, Kabeer *et al*. 2011). However, learning by doing and through discussions and observations have been the usual means for rural people to learn (Lave & Wenger 1991). Thus, learning for cycle-women's service users has been more about the transfer of knowledge, but usually without any involvement of codified forms of knowledge such as books.

Against these customary practices around learning and developing knowledge, the cycle-women demonstrate codified knowledge through the content, most of which are text and image types, including video clips. Furthermore, the majority of these video clips use animation[246], which cycle-women's group members believe as not being representative of the reality. Use of animated content probably offers Tech-Net a cheaper means of sourcing the content, because the content developer could produce animation within a computer laboratory[247], and without engaging with the context and/or the target viewers of the content. However, all forty group members of the five

[246] over three fourth of the total contents, about 100 in number, use animations
[247] Raihan [PO3] shared the content development process with me during the interview session.

cycle-women confided that they prefer real-life instances or demonstrations in video clips, instead of animations or any other type of content. The cycle-women also think that animation undermines the significance of the content, as their group members consider animation to be entertainment rather than as a means of knowledge development. This demonstrates that visual appearance of the content influences the degree of reliability or trust in it. Jonaki Begum [BC9], one of the members of Saleha's [BC1] group S1, shares:

> "It would be very effective if we (peer group members) could learn from videos (with real-life demonstrations). Her videos (content) are good but we do not want the cartoons (animated content) as we find it very difficult to learn from those in real terms. We rather find it entertaining than something to learn from…We can surely benefit if we could watch videos (with real-life demonstrations) on cattle diseases and related issues. We will be able to learn from videos if those demonstrate symptoms of the disease and possible measures to tackle those diseases, it will also save our time and money because we then will not need to go to the government veterinary hospital which is far away."

The cycle-women also argue that video clips with real-life instances, instead of animations, are better for them, as well as for their group members, to understand and conceptualise the underlying knowledge. In this regard, Jaynab [BC24] shares:

> "Videos (content) are the most effective (means). I learned a particular needlework from WebVideo[248]. Earlier I tried to learn it from a book, but could not learn. In those videos (content) real people demonstrated the needlework. I simply followed them and it was easy for me to learn…Learning from videos is the easiest."

This shows that the type of the content affects making sense of it because different types need different levels of imagination power in order to internalise the underlying concepts and aid the development of knowledge. While video of real-life instances or demonstrations could be useful in minimising the required imagination power for rural people to make sense of the content, use of animation appears to put this prospect down.

Preference for learning from real-life instances in video clips can be considered as the possible closest match to the usual ways the cycle-women and their group members have been learning and developing knowledge. This is because video clips can

[248] This anonymised website is a popular free video sharing sight on Internet.

demonstrate real-life instances with audio explanations without further codification of relevant knowledge. This makes it easier for rural people to make sense of the content. In the case of all other types of content, such as text, image and audio, multiple levels of codifications risk the modification of the original intended knowledge.[249] This video clip type content with real-life instances might be the potential type of content that can address Van der Velden's (2002) concerns that ICT tools are not used appropriately to facilitate knowledge development for developmental outcomes. Following Sen's (1985, 1992) capability approach framework, type of content thus can be considered as a conversion factor which can convert the e-learning content into an effective source of knowledge development. It can therefore be argued that the types of content have considerable influence over learning and knowledge development through e-learning, and that video clips of real-life instances, which conform to the culturally shaped knowledge development practices, offer comparatively more convenient learning experiences for both the cycle-women and their group members.

6.9. Roles of local technical support

In this section, I discuss how availability of consistent local technical support around computer repair and troubleshooting, beyond the remit of Tech4Women, influences the cycle-women's adoption of e-learning. This in turn affects the social embeddedness aspect of e-learning in this area.

Tech-Net offers the cycle-women with computer related technical support through Nijer-Kaj but this support is limited and strictly bound to Tech4Women. Kishor [PO7] provides this technical support when cycle-women cannot access Tech-Net provided content through the Internet, or they fail to download any free content, or any software does not function properly, or there is an Internet connection problem. However, he cannot provide computer repairs and complex troubleshooting related supports because he is not trained in these. At present, Kishor [PO7] and all the cycle-women need to travel about 50 kilometres to find an expert to repair their computers, or to resolve any complex troubleshooting. As a result, the cycle-women need to spend money, time and effort whenever they face these problems. Saleha [BC1] also expresses her concerns

[249] Firstly, content developers' knowledge source itself is codified into texts which Tech-Net offers to them; secondly, the content developers (who are not development experts and who do not consult with cycle-women or their group members) use their understanding while further codifying the already codified knowledge source into cycle-women's content; and thirdly, after decoding information from contents, cycle-women again codify their knowledge from these content using their understanding in order to explain to their group members.

that the cycle-women cannot get support from Kishor [PO7] if they do not work for Nijer-Kaj. In this regard, Kishor [PO7] argues:

> "I can only support them (cycle-women) as part of my job responsibilities…I think local market (formal economy) is not ready to provide the required technical supports on computer repair and other complex issues. (It is) probably because there is not enough demand for this support service here."

It is understandable that Kishor [PO7] is unable to provide ICT related support service beyond the remit of Tech4Women. However, the above view also shows that at local level there exists a critical shortage of technical support service around computer repair and complex troubleshooting.

The cycle-women demand that there should be consistent professional support service available in their locality, because without this support they do not feel confident to even use their laptop. In this regard, Saleha [BC1] argues:

> "I do not know how to fix it (laptop) when it malfunctions. I had to stop my work (serving as a cycle-woman) and even had to stop using computer when the project (Tech4Women) was closed due to funding crisis last year. Kishor ([PO7]) also did not offer any assistance as the project was not running. I had no choice. There was no technician (expert who can repair computer) in the local market…I can manage money to buy a computer and Internet (access), even though it is very difficult for me to manage, but I cannot manage local technical support when my computer breaks. So, even if you offer free Internet connection and free laptop, still most of us (cycle-women) will not use laptop and Internet as there is no local (technical) support here."

As seen here, the lack of consistent local level technical support can prevent even the ICT skilled cycle-women from using computers and Internet. It seems that Tech4Women does not consider the local formal economy with regard to availability of consistent technical support when developing local level capacity building in ICT. It only engages Nijer-Kaj staff, the cycle-women, and their service users in its ICT4D initiative. It can be argued that instead of the contextual socioeconomic setup, cycle-women's technopreneurship is rooted exclusively within Tech4Women, which, in Mansell's (2014) words, can be called an 'exogenous initiative' in this area, and thereby lacking the social embeddedness aspect. Availability of consistent local technical support can therefore be argued to have the potentials to convert e-learning into a means

of learning and developing awareness, skills and knowledge which can influence the learner's wellbeing. Hence, local technical support can be considered as a conversion factor, following Sen's (1985, 1992) capability approach framework. Therefore, local level technical support plays a critical role in enabling cycle-women, and thereby their group members, pursue e-learning in pursuit of wellbeing achievement through learning and developing awareness, skills and knowledge that they value.

6.10. Disguised participation and social embeddedness

In this section, I show how the cycle-women's group members participate in Tech4Women for a different motive than the intended purposes of learning and developing knowledge through e-learning in order to achieve their wellbeing. I refer to this ambiguous participation as a disguised participation and discuss the reasons behind it.

The cycle-women demonstrate their content in an informal space, which their group members prefer, such as in the courtyard or an open common meeting place within the neighbourhood. However, this preferred informal mode of learning or the contents the cycle-women use, do not seem to have become the point of interest among the group members. This is because except Ambala [BC7] (a group member of Saleha's [BC1] group S1) other group members could not recall what they have learned through e-learning. This raises concerns whether these group members are at all interested in learning through effective participation in Tech4Women. Therefore, it can be argued that although the cycle-women's group members join in the group sessions when the cycle-women demonstrate their content, their participation is more of a demonstration than it is a motivated active participation in learning. In this regard, Saleha [BC1] explains:

> "In reality, they (group members) keep in touch with me through joining in the courtyard meetings in order to receive future benefits. They think that if they do this then in future, if any aid arrives, they will have a better chance to get those…Aid from foreign sources are sometimes distributed by local NGOs, so ultimately we distribute those among them."

Saleha's [BC1] above explanation not only shows that group members participate in the group sessions for reasons other than learning and developing awareness, skills and knowledge, but also indicates that the way the cycle-women share knowledge with the

help of e-learning, could not convince them to pursue learning. Therefore, the cycle-women's group members' participation in Tech4Women appears as a disguised participation. In this regard, Jorina [BC12], one of the members of Saleha's [BC1] group S2, also shares:

> "I join in (courtyard meeting), (because) she (Saleha [BC1]) has got connections. Last year two of my neighbours received cows as aid from Divine Support (anonymised name of an NGO). I did not get anything. She might help me get some benefits in future if there comes any, because she works for Nijer-Kaj."

This statement endorses Saleha's [BC1] explanation and indicates the primary motivation why Saleha's [BC1] group members attend courtyard meetings but do not effectively participate and pursue learning through e-learning. It can be argued that these group members disguise their true intentions while joining in the courtyard meetings, because Tech4Women on its own merit could not motivate them to get engaged into it. This disguised participation evidences a lack of social embeddedness of Tech4Women in the rural realities.

6.11. Conclusion

This case shows that e-learning enhances the cycle-women's freedom or capability, as per Sen's (1985, 1999) capability approach framework, through creating opportunities to learn and develop awareness, skills and knowledge which they value, and thereby fosters their wellbeing. However, it does not work the same way for cycle-women's service users, mostly due to the particular design of Tech4Women and because of their limited idea about e-learning and its relevant usefulness. The analyses show that, rural people accept e-learning when trust is incorporated through the content, the facilitator and the implementer of the e-learning based initiative. It is also found that video clip type content with real-life demonstrations is more effective for rural people's learning, when the content is coherent with the gender role of the learner. The analyses also indicate that both the cycle-women and their group members feel a need for a local support that can guide them, inform them of e-learning and its relevant usefulness, and support them with making sense of e-learning. They identify the local high-school teacher to be that local support. Beyond this local support, a local level technical support is also felt necessary which can not only support rural people's e-learning adoption but can also facilitate social embeddedness of e-learning in the context.

Nonetheless, a consistent funding remains a necessary condition for e-learning initiatives to function properly.

Chapter 7

Findings and analyses: The Computer-Shop case

7.1. Introduction

In this chapter I present the findings and analysis based on the data I collected from the Computer-Shop case. My analyses inform that facilitator supported e-learning can foster rural people's wellbeing achievement through learning and developing awareness, skills and knowledge, but the underlying practical e-learning model of Tech4Agro in its present form, can bring only marginal outcomes. The top-down implementation approach of Tech4Agro, influenced by the commercially motivated funding supports, could rarely incorporate the realities facing the farmers, as well as the computer-shop owners/operators, in rural Bangladesh. The knowledge codification process which Agro-Tech pursued to develop the knowledge repository (the content) is contested and can be considered an outcome of the top-down implementation approach. The type of the content, which is mostly text, is also less appropriate for rural farmers to learn agricultural techniques. My analyses also show that while farmers can rely on low-tech ICT oriented e-learning, such as the ones through radio and television, they are sceptic about the e-learning model which Tech4Agro offers, mostly due to their lack of trust in the facilitator. Farmers' acceptance of e-learning is also shaped by their trust in the implementer and in this regard they trust the government the most.

I discuss my findings below under nine themes and analyse my data using Sen's (1985) capability approach framework.

7.2. Funding with commercial motives and the developmental outcomes

Here, I demonstrate that the commercial motives underneath the implementation of Tech4Agro could bring only marginal developmental outcomes through e-learning. This section analyses the way Agro-Tech organised the implementation of Tech4Agro by engaging commercial enterprises (Phone-Com and Agro-BD) in profit relationships in exchange for their funding, along with the international funding from Market-Aid. It shows how the profit relationships among Agro-Tech, Phone-Com and Agro-BD do not benefit the member farmers and the computer-shops that are the local level implementing institutions, in real terms.

Shamsu [PO11], the head of Agro-Tech, believes that market driven business initiatives can address developmental issues effectively. His personal ideology around development influenced him in framing Tech4Agro as an instance of utilising a business solution to address development issues related to agriculture; in this instance, supporting farmers in acquiring agricultural knowledge. In support of this approach, he argues: "Charity is not the way to bring development. It is business that can ensure development, though there are a few other factors." His preference for a commercial approach in addressing development is evident in his words above. While Shamsu [PO11] categorises Tech4Agro as a business solution to developmental issues, Ashraf (2010) considers Tech4Agro as a commercial initiative, which is argued to have a profit-making goal rather than a developmental goal (Wigand 1997). Although Ashraf studied Tech4Agro at a different location, the e-learning model was similar to the one I studied. Therefore, although Shamsu [PO11] claims Tech4Agro to be motivated by developmental outcomes, scholars such as Ashraf (2010) identifies Tech4Agro as being inherently commercial.

The primary motivation behind engaging commercial enterprises in funding, and offering technical support to Tech4Agro, is to benefit from the resulting profit relationship. In this regard, Shamsu [PO11] shares: "I invited Phone-Com, that, you (Phone-Com) earn some profit and at the same time let my project make its name." It shows that although Shamsu [PO11] promotes Tech4Agro as an initiative to bring developmental outcomes, his main motivation is to build his professional reputation. He argues that while profit for Phone-Com comes from the Internet use by the computer-shops, his profit is the establishment of the brand 'ICT4Poor (anonymised)', the name affiliated with Tech4Agro. He shares: "My main motto is to establish my brand, ICT4Poor. I will get many projects in course of time, but I need to establish my brand first." It shows that instead of developmental outcomes through sharing agricultural knowledge with the help of e-learning, Shamsu [PO11] prioritises the achievement of institutional reputation to enrich business prospects of Agro-Tech in the areas of ICT4D implementation. As he goes on to state:

> "Our (Agro-Tech) main business is research and consultancy… Phone-Com, Agro-BD, all have their respective interests and Agro-Tech just integrated all these (institutions) and (is) earning money."

Agro-Tech did not have to invest any money from its own account into the computer-shops; rather the funding support for Tech4Agro turned into a source of income for it. Shamsu [PO11] also admits that Agro-BD provides funding for Tech4Agro in order to get feedback from farmers on the agricultural products it produces. This demonstrates that the involvement of these commercial enterprises in implementing Tech4Agro is motivated by anticipated commercial gains, and, furthermore, developmental gains are rather assumed as a certainty.

While Tech4Agro offers commercial incentives to Agro-Tech, Phone-Com and Agro-BD, but the three computer-shops that implement it at the ground level do not benefit in similar way. The three respective technopreneurs of the computer-shops do not get the financial benefits they anticipated they would get through their involvement in Tech4Agro. Instead, they need to offer free e-learning based knowledge sharing services at their own cost. Except Milad [PO12], who earned only BDT10 (about £0.08) through printing a page for a member farmer, none of the other two technopreneurs has received any financial gain for their services. All three of them rather need to pay Phone-Com for the Internet connection they use, as this is a requirement of their business agreement. In this regard, Shayedul [PO16], one of the three technopreneurs, claims:

> "I gained nothing from this (Tech4Agro). Even I did not get technical support from Phone-Com which it promised. Phone-Com occasionally contacts me just to check whether I am using their Internet service or not!"

Shayedul's [PO16] words illustrate that, as the ground level implementing partners of Tech4Agro, the technopreneurs do not gain what they anticipated they would in exchange for their services for Tech4Agro. The three technopreneurs rather consider Tech4Agro as an obligation imposed by the institutional power relationships through the commercial affiliations made with the computer-shops by Phone-Com and Agro-Tech (see section 5.3.1). Prahalad (2010) argues that it is possible to make profit through business initiatives targeting those living in situations of poverty, but the realities illustrated by this case evidence that this claim might not apply to the particular design of Tech4Agro.

Although the technopreneurs do not find their involvements in Tech4Agro as rewarding, local facilitators[250] have a mixed experience. Rajekul [PO15], one of the two facilitators of the Computer-Shop case, received financial gains from Agro-Tech without facing difficulties, which comprise monthly salaries and commissions for registering farmers as members of Tech4Agro. However, Dewan [PO13] faced difficulties with delayed payments and had to spend a considerable amount of money and efforts in communicating with Agro-Tech to rectify this issue. Milad [PO12], the technopreneur who hired Dewan [PO13], was unable to settle this matter on his behalf as Agro-Tech does not maintain frequent contact with him. Eventually Dewan [PO13] received his last month's salary but after a year since when it was due. Thus, while Tech4Agro offers Phone-Com a solid reputation for promoting Internet use at a grassroots level, as well as income through its Internet services, and it offers Agro-BD customer feedback on its products; at the ground level it only marginally benefits the facilitators. This echoes what Unwin (2009) claims: private sectors get involved in implementing ICT4D primarily for commercial gains.

Unlike most other development projects, Tech4Agro does not involve any national or local level NGO for its implementation. Usually NGOs are involved so that projects can work closely with their primary local project participant. However, Agro-Tech does not always prioritise working directly with its project participants, the member farmers. Instead of taking the new e-learning based learning opportunity to them, Agro-Tech rather works on its expectation that member farmers would be interested to go to the computer-shops for e-learning. For instance, Shayedul [PO16], the owner of the computer-shop Com-Rang, was not provided with the facilitator support to take the e-learning based services to local member farmers, though the other two computer-shops were provided this support. This eventually resulted in zero attendance at Com-Rang to access the agricultural knowledge sharing services of Tech4Agro. This is mostly because Shayedul [PO16] could not afford to reach out to local farmers at a cost of his profitable business hours. Although both Faruk [PO14] and Milad [PO12] were provided with facilitators, they felt that they could only offer services related to Tech4Agro for about five or six times. However, after the facilitator support was withdrawn by Agro-Tech, no member farmer has visited their computer-shops for the

[250] After funding support from Market-Aid ended, Agro-Tech withdrew facilitator supports for all the computer-shops which were involved in implementing Tech4Agro.

e-learning services. Shamsu [PO11] also comments on this low effectiveness and poor developmental impacts of Tech4Agro. He admits that:

> "Farmers are still not ready to accept ICT (Internet) based initiatives. Their social and behavioural patterns are not ready to accept high-tech devices. They feel it's not their necessity…After a year when funding from Market-Aid ended, I revisited those areas and found that (member) farmers could not even recall our project in the beginning."

This low opinion does not only show that Tech4Agro has been less effective than it was anticipated to be, but also show that it has not been appropriately embedded within the contextual social reality because it could not become a necessity for the member farmers, as evidenced by the low uptake.

In spite of the poor performance of Tech4Agro at the ground level, Shamsu [PO11] shares that he is satisfied because he gained the expected level of brand recognition of Tech4Agro among the development practitioners and the donors.[251] Although the low performance of Tech4Agro demonstrates that rural farmers are not yet ready to adopt high-tech options for e-learning in the form it is offered by Tech4Agro, Shamsu [PO11] is planning a new and even more sophisticated ICT4D initiative for rural farmers. He has planned the design of the new initiative on the design of Tech4Agro, even though Tech4Agro could not bring the anticipated developmental gains. He thus ignores his realisation that the rural context is not ready for the ICT4D initiative he designed for Tech4Agro. Kleine and Unwin (2009) particularly criticise this approach of ignoring the experience of previous involvements in ICT4D, while framing new initiatives. It can be argued that Shamsu's [PO11] approach towards implementing ICT4D initiatives for farmers in rural areas shows that Agro-Tech is only marginally motivated to consider the contextual reality while designing the ICT4D initiatives. It also indicates that the underlying motivation of Agro-Tech in implementing Tech4Agro is influenced more by the anticipated commercial gains than the expected developmental outcomes through sharing agricultural knowledge among rural farmers.

The discussions above show that, by prioritising the commercial interests of the commercial enterprises (Phone-Com and Agro-BD) in exchange for their funding

[251] Here, brand recognition implies that many people know about the name of this project. However, I found that only a few member farmers have recollection of this project, raising concerns whether the brand recognition Shamsu meant is intended for other people than the rural farmers.

support, over incorporating the ground level contextual realities, such as considering the readiness of the farmers and ensuring benefits for the grassroots level implementing partners (the technopreneurs), Agro-Tech diminished the effectiveness and anticipated developmental outcomes of Tech4Agro. Given that after funding from Market-Aid ended (though funding from the commercial enterprises still continues) Agro-Tech withdrew facilitator support which substantially affected the performance of Tech4Agro, it can be argued that socially responsible and consistent funding can influence the conversion of e-learning to become a new means of wellbeing achievement. Hence, following Sen's (1985, 1992) capability approach framework, funding can be considered as a conversion factor. Therefore, it can be argued that when commercial enterprises approach to implement ICT4D, there is a possibility that the ground level implementing partners (the technopreneurs) and the project participants (member farmers) gain the least from the respective initiatives. Furthermore, the respective ICT4D initiative might bring only marginal developmental outcomes when it lacks reflecting on the contextual realities in an appropriate manner.

7.3. A top-down approach

In this section I demonstrate how Agro-Tech has been maintaining a top-down approach throughout the implementation of Tech4Agro. This top-down approach is applied both to the design of the knowledge repository used for Tech4Agro, and in managing the views and feedback from the grassroots level.

Shamsu [PO11] has been having the absolute control over the design and implementation of Tech4Agro by Agro-Tech. He designed the online knowledge repository that is being used for Tech4Agro. He also selected who should contribute to the knowledge repository and what should be in it. According to his design, the knowledge repository was developed by Agro-Tech. Only staff at Agro-Tech, none of who are regarded as agricultural or development experts, developed the knowledge repository based on an initial agricultural knowledge repository, Shamsu [PO11] managed from Market-Aid. There was no academic expert involved in the process of developing this knowledge repository, nor was there any provision for farmers, facilitators or the respective technopreneurs to contribute to its development. The only way farmers can influence the knowledge repository is through enquiring about agricultural issues that are not already addressed by the knowledge repository. In this

regard, Papiya [KC16] (who initially developed the knowledge repository before Agro-Tech worked on it) states:

> "The initial database (knowledge repository) was absolutely bookish. …we used to update it, but only when any farmer enquired about any new problem. Except this problem oriented indirect contribution, there was no way for farmers to contribute to this knowledge bank (knowledge repository)."

It shows that Agro-Tech uses a similar approach in updating the knowledge repository. With the exception of this approach to updating the knowledge repository, the approach Agro-Tech pursues towards agricultural knowledge sharing can be compared as a transfer and diffusion model of knowledge sharing, which in Avgerou's (2008, 2010) view majority of the ICT4D initiatives also pursue. However, this approach to knowledge sharing risks ignoring the situated perspectives and might underestimate the potentials of local knowledge. Hence, the particular design of the knowledge repository and the approach adopted to develop it can be argued to be the outcomes of a top-down approach of implementation.

Along with resulting in the contested approach to develop the knowledge repository, the top-down approach also raises other concerns. For instance, the knowledge repository promotes increased use of farming related products, such as chemical fertilizers, pesticides and insecticides, which has considerable commercial implications. The point of concern is involvement of Agro-BD, a major manufacturer of these products, as one of the information providers for the knowledge repository. It was able to use this relationship to access customer feedback (farmers' feedback) on the products it produces. Furthermore, and more alarmingly, while Agro-BD provides product information for the knowledge repository, it does not provide any information relating to the side effects or long term impacts of those products. Nurullah [BC61], a member farmer where Dewan [PO13] used to work, shares:

> "He (Dewan [PO13]) familiarised us (member farmers) with new chemicals (pesticides) that are locally available…Earlier we (member farmers) used to use less pesticide. After this project has started, we now use more pesticides. I don't know about any resulting impact on my arable land, but I am getting more crop as I can manage pests, as a result I earn a bit more as well...We (member farmers) want to know about long term impact of these (pesticides) on our land, but we do not have any source from where we can know about these."

This illustrates that while Nurullah [BC61] can grow more crops using increased volume of pesticides, as is advised through Tech4Agro, he has no access to knowledge regarding the long-term consequences of using those pesticides from any source. The underlying commercial motivation of Agro-BD to get engaged with Tech4Agro raises broader concerns about whether there are other vested interests behind the agricultural knowledge Tech4Agro shares with its member farmers. What is evident is that the top-down approach in implementing Tech4Agro has given substantial control to Agro-Tech in developing the knowledge repository in a certain way, raising concerns around the politics of knowledge development.

As with the design of Tech4Agro, which excludes participation from the ground level, equally in the implementation process of Tech4Agro, no provision is kept to incorporate feedback from any of the three technopreneurs, the two facilitators, or any of the member farmers. In this regard, Milad [PO12] states that he requested Agro-Tech to adopt a broader approach to address the farmer's agricultural problems in a holistic and integrated manner. He argues that as he lives with the farmers in the same locality, he observes their lived realities every day in a way which Agro-Tech does not. He claims that Agro-Tech would not listen to his advice. He argues:

> "What would these farmers do with only information if they cannot make use of those in reality? They need good quality seeds and tractors, or money to buy these. I asked Agro-Tech to provide these to the farmers which they badly need, because only then the information can help them, but it did not listen to me. I am a simple shopkeeper (technopreneur) why would it listen to me?"

It shows that agricultural information or knowledge sharing alone is not sufficient to ensure that farmers will follow the knowledge and make positive changes in their lives. This is because farmers also need good quality seeds and other products, and adequate money to afford these, in order to make good use of the shared knowledge. Information or knowledge sharing can be considered as a part of the bigger picture of the ground reality, which includes ensuring these other elements as well.

As shown here the top-down approach of implementation overshadows the underlying developmental intention of Tech4Agro. The involvement of commercial enterprises in implementing Tech4Agro also could not maintain the required balance between positive social changes and profit making, which Rashid and Rahman (2009) identify as

essential criterion to meet if a business initiative is to achieve developmental goals. Following Sen's (1985, 1992) capability approach framework, this top-down implementation approach can be considered as a negative conversion factor which limits opportunities or options in enabling e-learning initiatives to reflect on the ground realities.

7.4. Contested approach to knowledge codification

This theme illustrates that Agro-Tech pursued a contested approach to knowledge codification as related academics were not involved in the process and local knowledge was not recognised as one of the sources of knowledge. Here knowledge codification implies converting or encoding existing knowledge; in this case this was the conversion of written text into a digitally readable form that can be accessed through the online knowledge repository (see Jensen *et al*. 2007). This can also be considered as re-codification or digitisation of already codified knowledge, because the sources of knowledge Agro-Tech used to develop the online knowledge repository were mostly in the form of text.

Use of ICT as a convenient means of codifying knowledge into expected forms is a common practice now (Jensen *et al.* 2007). Shamsu [PO11] also utilised this opportunity in order to get the online knowledge repository developed by Agro-Tech. Agro-Tech used ICT, particularly computers and the Internet, to encode existing agricultural knowledge into digital form so that it can be accessed through the Internet and read via a computer screen, tablet or mobile phone. While selecting the sources of knowledge, Shamsu [PO11] reflected on his personal understanding of the agricultural knowledge rural farmers in Bangladesh might need to know. He used a few texts on agriculture, information from Agro-BD on its agricultural products, a few local research organisations and North American agricultural projects as the sources of agricultural knowledge. While he included North American agricultural information without testing its viability, he did not include the knowledge from academics, one of the most essential stakeholders of knowledge development, or expert agricultural professionals; nor did he utilise their knowledge to check the validity and suitability of the codified knowledge. Thus, this inclusion of North American knowledge over local expert knowledge evidences Graham's (2014) allegation that the content used in ICT4D are not free from influences of the global north. While Shamsu [PO11] involved North American institutions to contribute to the development of the knowledge repository, he did not

involve any of the four agricultural universities in Bangladesh. The agricultural universities in Bangladesh could have contributed with contextual information and relevant knowledge because they work closely with both the farmers in rural areas and the scientists in the laboratory. Therefore, the sources of knowledge which were used by Agro-Tech for knowledge codification can be argued to lack contextual significance.

Along with the issues around sources of knowledge, influence of Shamsu's [PO11] personal opinions on selecting the categories of knowledge for the knowledge repository can also raise concerns among development experts. While development experts value participatory contents and local knowledge, Shamsu [PO11] does not believe this to be the case; as a result, the knowledge repository of Tech4Agro does not include any local knowledge or reflect the participation of its users. He shares:

> "I do not believe in participatory contents; these are emotional stuffs. We (Agro-Tech) don't allow these. Development experts believe in this but we do not. They support indigenous knowledge. We do not."

While acceptance of local knowledge is contested (Briggs 2005), Akram [KC1], a senior academic and agricultural researcher I interviewed, argues that farmers in rural Bangladesh prefer to pursue local knowledge alongside scientific knowledge because they benefit from both. Papiya [KC16] also shares several instances of her work experience with rural farmers in Bangladesh, where the local knowledge brought solutions to some agricultural problems that the Japanese agricultural experts working on the projects could not resolve. Western science, in some areas of scientific knowledge, has also started promoting local knowledge (Nakata 2002; Reddy 2006). Brammer (1980), the renowned expert on agriculture in Bangladesh, categorically endorses the local knowledge that farmers in rural Bangladesh practise regularly. Chambers (1983) also argues that farmers in rural areas prefer to pursue indigenous knowledge and related practices. However, even without taking any position for or against local knowledge, and adopting Sen's (1985, 1999) capability approach framework, which focuses on freedom and pursuing what one values, it can be argued that inclusion of local knowledge in the knowledge repository could have increased the opportunity to fulfil rural farmers' aspirations because they value pursuing some of the local knowledge.

Hence, it can be argued that Agro-Tech followed a top-down approach in selecting the sources of knowledge to codify for the knowledge repository. This decision was influenced by Shamsu's [PO11] personal ideology around development and knowledge sharing, which lacks some of the shared values around development. This approach can be compared to what Freire (1970) calls a banking concept of education where knowledge is bestowed upon others who are considered to be less knowledgeable by those who share knowledge and who consider themselves knowledgeable. Exclusion of the related academics and agricultural experts by Agro-Tech in its knowledge codification process can be considered as an outcome of the top-down approach, which raises concerns around appropriateness of the knowledge it shares and their contextual significance, and thereby makes it a contested approach to knowledge codification.

7.5. Significance of the type of the content

This theme shows that learning experiences through e-learning is influenced by the type of content used in by e-learning. I discuss the usual learning practices rural people follow, in order to demonstrate the rationale behind the influence of the type of content on the learning experience. I limit my discussion around the learning experiences of the three technopreneurs and respective member farmers. Exclusion of the facilitators for this discussion is grounded in the fact that not all computer-shops were provided with facilitators, and that facilitators had no direct access to the online knowledge repository of Tech4Agro. First, I present the shared perspectives of learning among the three technopreneurs and respective member farmers. Then I discuss how technopreneurs utilise e-learning for learning purposes. In the end, I discuss about the type of content member farmers prefer for e-learning purposes, and the type of content Agro-Tech uses for Tech4Agro.

To all seventeen member farmers, and the three technopreneurs, learning means informal learning. The majority of their know-what are learned through informal social interactions in their closely-knit rural society.[252] Illich (1973) also argues that "most learning happens casually, and even most intentional learning is not the result of programmed instruction" (p20). However, they learn most of their know-how through observations and by doing. In this regard, it is unusual for them to use text or written documents for learning purposes, which require comparatively more imaginative power

[252] Know what refers to knowledge or information about facts (Roberts 2000).

than it is required for their usual informal learning practices. Therefore, it can be argued that they are mostly accustomed to learning by means of less imaginative power.

In the case of learning with the help of e-learning, the technopreneurs and member farmers experience different realities around learning experiences due to their differences in education and level of ICT skill. This is because ICT skills and the education of the learners influence the e-learning experience. While ICT skills support the operational aspects of the learning experience, the level of education influences how the learner makes sense of this learning. All three technopreneurs completed their bachelors' degrees and know about basic computer operating.[253] However, none of them attended any ICT training or academic courses in ICT. They learned the basic computer operating skills through doing, with the help of their friends or acquaintances that is through informal interactions.[254] They also take advantage of the freely available content on Internet. These basic computer operating skills work for them as a virtuous cycle of skills-building, by leading them to learn new skills, particularly how to learn with the help of computer and Internet based e-learning.

Informal e-learning opportunities enabled Shayedul [PO16] to develop the required skills in order to become competent enough to offer basic computer operating training on a commercial scale in his locality. While Faruk [PO14] and Shayedul [PO16] cannot afford to spend time on e-learning for reasons other than what their technopreneurship demands, Milad [PO12] appears enthusiastic about developing knowledge through e-learning, beyond his professional needs. He uses computers and Internet based e-learning opportunities to learn about health issues, and follows those he feels provide real benefits. These technopreneurs claim that where e-learning is concerned, they can learn from all existing types of content, such as text, image, audio, and video. However, they prefer video content particularly when they need to learn any process or technique. For instance, Milad [PO12] shares that he learned how to fix many of his computer device related problems, following free online videos on the Internet. He argues that he could not follow those processes properly by only reading the related tutorials and e-

[253] In their views, computer operating refers to - how to operate computers, access any website, and how to search online.

[254] Faruk [PO14] informs that he learned how to compose and send an email, from his friend who was a professional computer expert. Milad [PO12] informed that one of his friends used to send him website addresses of different online tutorials and e-books through which he learned word processing, photo editing, and basic computer repairing techniques, all by self-directed e-learning. Shayedul [PO16] learned computer operating from one of his friends in his locality.

books.[255] Both Faruk [PO14] and Shayedul [PO16] also share similar views and similar instances. This preference for video type content can be explained by Sennett's (2008) argument that the written form is inadequate in detailing physical actions and that imagination power is essential to understand technical issues, which can be stimulated by audiovisuals or videos in a more effective way. The type of content, therefore, plays a considerable role in making sense of it, even for those who are educated.

However, member farmers do not have any clear idea about different types of content used in e-learning. This is because they are not familiar with computer and Internet based e-learning opportunities, nor are they offered direct access to e-learning by Tech4Agro. Based on their experience of television and radio based e-learning opportunities, they argue that video content has a greater impact on their learning experience and knowledge development. In this regard, Aslam [BC46], a member farmer in the area where Rajekul [PO15] worked, shares:

> "The basics of agriculture we (the farmer) learned in our childhood, by observing or through conversations with neighbouring farmers, by practicing (doing)…Afterwards, new diseases evolved, new hybrid (crop) was introduced, new fertilizer, new chemical (pesticides and insecticides), new techniques; we (the farmer) learned about these in course of time - generally from neighbouring farmers. We do not need to learn the basics (of agriculture), just need to learn new techniques…Now (we) watch television, *Krishi Dibanishi*, it is very useful for learning (agriculture). Earlier (we) used to listen to radio (programmes). That was helpful as well, but now (we) can also watch on television screen which is even better for us to learn. (We) listen and watch at the same time. We can learn directly from that programme (*Krishi Dibanishi*)."

It shows that these farmers do not want support to learn the basics of agriculture, but rather they are keen to learn new agricultural techniques. Apart from support from their neighbouring farmers, certain television programmes have been their source of learning new agricultural techniques. All the member farmers claim that text and images do not provide sufficient details to aid their understanding, and that audio does not show them how to practise the techniques properly. Sennett (2008) also addresses this issue arguing that written form appears inadequate in detailing physical actions. He further argues that audiovisuals or videos can stimulate the required imaginative power in a more effective way, which is essential to understand technical issues. This explains why farmers prefer video content and have been following television programmes to learn agricultural

[255] E-book is a digital version of book which can be read on display screen.

techniques. Lebel (2013) and Wisner (2010) also argue that the kind of knowledge the farmer needs remains embedded into rural people's practices and is therefore difficult to document in text. Therefore, preference for video content in e-learning appears as an experiential choice for these farmers, one which is also legitimised by academic scholars.

While member farmers, as well as the technopreneurs, prefer video content for effective e-learning experience, Tech4Agro promotes mostly text based content, a few of which have some images. Although scholars argue that ICT has given enhanced opportunities to codify knowledge into various ways, to create text, audio and video content, Agro-Tech only utilised this potential of ICT to a limited extent (Johnson *et al.* 2002; Lundvall 2006). Agro-Tech used ICT only to codify knowledge in order to develop text type content, which can be viewed on screen. Shamsu [PO11] also admits that by utilising ICT, he adopted the easiest means to codify knowledge. Therefore, Agro-Tech used ICT as the most convenient way of developing content but without considering the effectiveness of the chosen type of content. As the member farmers do not have direct access to the content of Tech4Agro, and they can only get access to the verbal explanations of the content by the respective facilitators or the technopreneurs, the underlying knowledge of the content needs to go through multiple levels of reinterpretation.[256] These multiple levels of reinterpretation risk distorting the intention of the codified knowledge. The level of difficulty to internalise the underlying knowledge of the text based content is high for the technopreneurs because by profession they are not farmers. As a result, it cost them substantial imaginative power to make sense of the written descriptions of the agricultural techniques in the content, as well as risking distorting the knowledge the content intends to share. The risk of this particular distortion could be lower if video content is used, which would facilitate stimulating the required imaginative power for the technopreneurs. The type of the content thus can support converting e-learning into becoming an effective means of learning, and thereby influencing rural people's wellbeing achievement through e-learning. As per Sen's (1985, 1999) capability approach framework, type of the content,

[256] Firstly, by the facilitators - who used to listen to the agricultural problems from member farmers and memorised them in order to explain them to the computer-shop operators; secondly, by computer-shop operators - who used to evaluate the codified knowledge of the knowledge repository based on their understanding of the respective problems; thirdly, by facilitators for the second time - who used to explain member farmers what they had understood from computer-shop operators explanations with the help of their own understanding; and fourthly, by respective farmers - who used to make sense of what they heard from facilitators, reflecting on their own understanding.

therefore, can be considered as a conversion factor. Hence, it can be argued that the type of content used in e-learning has substantial influence on making sense of the underlying knowledge.

7.6. Roles of language

This theme shows how language influences technopreneurs and member farmers understanding the underlying knowledge shared by the knowledge repository. It particularly points out the difficulties created by the use of standard Bengali language in the content, which is not fully understandable to member farmers who are primarily familiar with their local language.

All three technopreneurs are educated and local to the case locations, so they understand both standard Bengali language as well as the local language. However, as they are not farmers, sometimes they face difficulties in translating some of the bookish standard Bengali terms into locally understandable form. They are not familiar with all the agricultural terminologies in standard Bengali; as a result, sometimes they cannot explain some of the terminology used in the content in a way that respective facilitators and/or member farmers could understand. In this regard, Milad [PO12] shares his experience:

> "Once I asked a farmer whether his land was a highland or lowland, because I needed that information to specify the solution to his problem from the knowledge repository. He could not tell me what his land was like because they (farmers) have their own informal measuring approaches in this respect. However, the software (knowledge repository) does not understand their local terms and informal measuring approaches. [257] This is a big problem I face."

Thus, not being able to translate the terminologies from standard Bengali into locally understandable terms is a barrier to learn from the knowledge repository effectively. Member farmers are familiar mostly with their local languages and local agricultural terminologies which they use to describe agricultural matters. [258] As a result, they also faced difficulties when they were required to describe their agricultural problems to the respective facilitators using agricultural terminologies in standard Bengali language. As the facilitators were also not farmers by profession, they faced similar problems with

[257] All the three technopreneurs call the knowledge repository a software.
[258] These seventeen farmers speak in two local languages which are slightly different but similar. They understand both the languages well.

regard to translating agricultural terminologies from standard Bengali language to local language and vice versa.

Agro-Tech did not prioritise addressing these specific problems around use of language. It used bookish standard Bengali language throughout the knowledge repository, which member farmers do not understand properly. It also followed only a literal translation of the technical terms and procedures it borrowed for the knowledge repository from agricultural knowledge encoded in English. As member farmers are familiar mostly with local agricultural terminologies, sometimes they can not make sense of some of these translations. In the case of e-learning, language therefore plays a pivotal role in making sense of the content. Following Sen's (1985, 1992) capability approach framework, language thus can be considered as a conversion factor. This is because language influences learning and developing knowledge, and when appropriate language is used in the content then it can convert codified knowledge in the content as a means of developing respective knowledge for the learner. Depending upon which language is used; language thus can enhance or limit learning opportunities by means of e-learning, and thereby influence freedom of learning through e-learning in pursuit of wellbeing achievement.

7.7. Influence of trust in rural realities

This theme shows how trust influences member farmers' engagement with learning agriculture through e-learning. To understand the roles of trust in accepting e-learning as a new means of learning by the member farmers, first, I discuss below how trust around learning and developing knowledge in agriculture is embedded in rural reality. Then, I discuss the issues around trust that member farmers encounter in adopting e-learning as a new means of learning and developing knowledge. I also discuss how Tech4Agro addresses issues around trust and how member farmers want e-learning to accommodate trust. I do not consider issues of trust around e-learning encountered by the technopreneurs or the facilitators, because their access to the knowledge repository is only concerned with knowledge sharing purposes, as part of their professional responsibilities, not for learning purposes.

Member farmers learned agriculture from their families and neighbours within their surrounding social settings. This way of learning and developing knowledge in

agricultural has become a taken-for-granted practice. In this regard, Mosleh [BC47], a member farmer in the area where Dewan [PO13] worked, shares:

> "Learning the basics of agriculture has never been a problem for us (the farmer). We learn from our parents and neighbours. We grow up through learning agriculture and working in the field."

It illustrates that rural people learn agriculture by doing and interacting with family members and neighbours; and that this has been an integral part of the rural realities, embedded within the social relationships among family members and neighbours. Lundvall (2006) also recognises this means of learning by doing. As their learning process comes into being only through kinship and social relationship, it can be thought to be grounded in trust relationships. This is because trust is developed through social relationships (Granovetter 1983, 1985). According to Misztal's (1996) sociological framework of trust, this sort of trust can be categorised as trust in the forms of habitus[259] and passion.[260] It is a form of habitus because it is based on the particular lifestyle of the closely-knit society they live in, and also a passion because it is grounded in personal relationships, familiarity or friendship (Lie *et al*. 2015).

In the case of agricultural problems, member farmers usually consult with local expert farmers who they consider as their trusted experts for agricultural matters. They have warm relationships with their local expert farmers. One of the reasons for this close relationship is that, becoming a local expert involves considerable social interactions with local people. Realised gains, which are the achievements or anticipated outcomes after following suggestions from the local expert farmers, or proofs of expertise, motivate these member farmers to consider these local expert farmers to be their trusted experts. They claim that the credibility of these local expert farmers is enhanced further when they are trained by the agriculture department of the GoB. This approach towards associating expertise with government training also shows their trust in government training programmes on agriculture.

Member farmers also recognise the contributions of two ICT devices, radio and television, which they claim have contributed to their learning and developing

[259] It develops "out of the values and lifestyles of a social group" (Lie *et al*. 2015, p5).
[260] It "is based on personal relationships, familiarity and bonds of friendship, and on the affective quality of relationships" (Lie *et al*. 2015, p5).

knowledge in agriculture as trusted knowledge sources. They share fond memories of the radio programmes and how they contributed to their development of agricultural skills. Nurul [BC48], a member farmer in the area where Dewan [PO13] worked, shares:

> "Radio was a trusted friend and useful for learning agriculture. We (the farmer) used to listen to it everyday; even we used to carry that to the field so that we could listen to it while working. We learned many basic techniques from radio (programmes). The early morning programme was especially popular. We (the farmer) also used to listen to programmes on health related issues. … There exists no radio in the market now. We cannot listen to those programmes anymore for learning purposes."

It shows that although they do not listen to the radio now, it was previously embedded in the everyday life as a source of learning and developing knowledge on agriculture and health. It can be argued that they trust radio as a means of learning because of its proven usefulness. Although their use of radio substantially declined, coupled with the decline in supply of radio in the local market, but they have been able to learn agricultural skills by watching agricultural programmes on television since the mid-1980s. All of them mention that they only watch the agricultural programmes that are produced by Meraz [KC2]. They claim that they learned effective techniques by following his programmes and that they rely on him and his guidance with full confidence. There exists a sense of trust in him. Minto [BC49], a member farmer in the area where Rajekul [PO15] worked, shares:

> "We (the farmer) can follow his (Meraz's [KC2]) language; it is not the language of the city. He directly shows us how farmers in other regions work and shares their stories. We learn the techniques easily watching the farmers of those television programmes work, on the screen in front of us. It is very useful. …From his programme, I learned sowing in a line instead of in a scattered way, which I used to do earlier."

It shows that trust in the content, in terms of endorsement from a trusted expert, has considerable influence in adopting e-learning.

These evidences above correlate to different types of trust. Trust in both radio and television based e-learning can be considered as habitus form of trust, which, according to Misztal (1996), is developed through habitual practice. This is because learning by means of radio and television has been common practice among member farmers and their neighbours. However, there is a difference between these two instances of habitual

trust because while in the case of radio, member farmers do not mention any particular programme or person, in the case of television, they only refer to the programmes produced by Meraz [KC2]. They claim that they trust in him because they benefited from following his programmes and that instead of demonstrating instructional staged programmes, his programmes directly present agricultural techniques using real-life videos without altering (or codifying) the knowledge further. Their trust in Meraz [KC2] is not a virtual personal trust[261] because it is not the frequent presence on the television screen that made him a trusted expert; rather it is the effectiveness and usefulness of his programmes that eventually made him their trusted expert in agriculture (Sztompka 2000). Therefore, usefulness or realised gains work underneath the development of notions of trust, which are essential for member farmers to be confident in pursuing any particular learning practice.

Apart from these usual means of learning and developing knowledge in agriculture, another source of information on agriculture that has emerged in recent years is the local shops that sell farming related products such as seeds, chemical fertilizers, pesticides and insecticides. As there exists no other consistent and convenient local source of information from where these farmers can receive information about new seeds, fertilizers, pesticides, and insecticides available in the market, these local shops have become the only convenient source of related information for them. Sellers at these shops are members of respective local communities who these farmers trust for their knowledge on new products. [262] This development of a trust relationship might be attributed to the realised gain farmers experience by following their advice on the use of the products they sell, and also to the social relationships they have with these local sellers. However, there are factors to be considered with regard to this trust relationship: farmers have no other means to verify the information these sellers provide, and failures to achieve the expected outcomes of using the products these sellers sell are considered by respective farmers as misfortune, without questioning the effectiveness of the products. Amin [BC50], a member farmer in the area where Dewan [PO13] worked, shares:

[261] A trust relationship developed through exposures on television screens or in the media but not necessarily through any real-life contribution to the lives of the respective viewers (Sztompka 2000).
[262] I did not interview these sellers. Member farmers, Rajekul [PO15] and Dewan [PO13] shared their views about them.

> "We (the farmer) rely on the advice the shopkeeper (local seller) provides us regarding seed and medicine (insecticides and pesticides). Those (insecticides and pesticides) usually work, insects die. Sometimes those do not work, we lose crops, and we are in trouble; but then it is our bad luck."

While these shops might be seen as the only link between the rural farmers and new commercial agricultural products, at the same time the link might also raise concerns around the consequence of depending solely on commercial sources of information and around notions of adaptation to any resulting adversity. [263] Another point to note is that the farmers do not learn any agricultural skill or technique beyond the use of the products. Therefore, although issues around adaptation can raise philosophical debates about the appropriateness of the information services these sellers offer, mostly out of marketing tactics, and their long-term impacts on fertility; it can be argued that notions of trust in these sellers are grounded mostly in the immediate visible impacts of using the products they sell.

The approach Tech4Agro pursues to incorporate trust, while promoting e-learning, only marginally reflects on the respective rural realities around roles of trust in learning, which I discussed above. While Tech4Agro engaged local facilitators to share agricultural knowledge with member farmers, despite being members of local communities they were not either expert farmers or practising local farmers with whom member farmers usually consult to learn agricultural skills and to develop related knowledge. I also found that in order to register member farmers for Tech4Agro, facilitators approached only selected local farmers with whom they had a kinship, friendship or work relationship; that is by means of affiliation or confident expectation (Dunn 1988). They could only depend on a passion based form of trust, which is developed through personal relationships and friendships, because they felt that to get e-learning accepted by rural farmers as a new means of learning and developing agricultural knowledge, it needed to be based on trust relationships. This passion based form of trust could bring in initial trust in e-learning the way Granovetter (1985) argues social relationships can develop trust. This trust can also be considered as passive acceptance as per the innovation adoption behaviour framework, developed by Nabih *et al.* (1997). However, eventually this passion based form of trust or passive acceptance could not lead to the adoption of e-learning as a new means of learning and developing

[263] Adaptation implies attitude of the people, who live in situations of poverty, which convinces them to suppress their aspirations due to their hardship and deprivation (Clark 2009).

knowledge in agriculture, because the member farmers who placed initial trust in e-learning promoted by Tech4Agro, could not achieve expected or even considerable gains in the end. Zaman [BC51], a member farmer in the area where Dewan [PO13] worked, shares:

> "I know him (Dewan [PO13]) from work relationships which convinced me to try it (Tech4Agro promoted e-learning) …Once my lychee tree was infected and I followed his suggestions to resolve that, (I) applied all the medicines (pesticides) he asked me to apply but it did not solve the problem. I tried second time when he changed the medicine but nothing changed. Afterwards, I just stopped sharing (agricultural) issues with him."

This shows that although Zaman [BC51] tried the rely on e-learning for a second time even after failing to get expected results, eventually he declined to adopt it as a new means of learning and developing knowledge in agriculture due to lack of realised gain. While Zaman [BC51] initially tried e-learning, Khalek [BC52], despite having kinship with Rajekul [PO15], did not even place initial trust in the Tech4Agro promoted e-learning, which Rajekul [PO15] advised him to adopt. In this regard Khalek [BC52] argues:

> "He (Rajekul [PO15]) is my grandson, you know. I had to listen to what my grandson says. But I don't know whether what he says will work. He does not even do farming. So I just listened to him but did not follow. I rather preferred to work on the guidelines I received from government officers (government agricultural extension officers). They occasionally monitor our work as well."

This shows that even a close kinship could not bring in initial trust in the Tech4Agro promoted e-learning, because Rajekul [PO15] is not known as an expert farmer or even a practising farmer from whom member farmers usually learn agricultural skills and develop related knowledge. Therefore, while sometimes social relationships could engage member farmers in trying e-learning, lack of considerable realised gain could not motivate them in trusting in e-learning, or the way Tech4Agro promoted it, as a means for learning agricultural skills and develop related knowledge.

Taking into account their lived realities, all the member farmers argue that local high-school teachers who are trained by GoB in ICT would be their best local support in adopting computer and Internet based e-learning opportunities. They claim that teachers

are the most trusted and learned community members in their localities and hence, if they were engaged then farmers would be motivated to adopt e-learning to learn agricultural skills and develop related knowledge. Afsar [BC56], a member farmer in the area where Dewan [PO13] worked, shares:

> "It would be the best if computer teachers at local (high) schools[264] could help us (the farmer). They are learned and we all trust them and their expertise. If they help us, then it would be the most convenient option for us. They can clearly explain everything to us in our language…We don't have computers. We don't know much about these (computer and e-learning) …We actually don't even want to learn how to operate those (computer and internet). Government has given computers to the high-schools, even trained the teachers on computing. It would be better if it (accessing e-learning) can be at school. Even women feel comfortable to visit school anytime. Anyone can go to school. I think it is the best place for this (e-learning)."

It shows that member farmers are keen to access the opportunity (or enhance capability or freedom, in Sen's (1985) term, as per his capability approach framework) around learning, which e-learning has to offer to them. However, they also claim that they do not have a clear idea about what they can learn from e-learning. Nonetheless, they are ready to adopt e-learning as a new means of learning, when their trusted local experts, the ICT skilled high-school teachers, can help them with access to the computer and Internet based e-learning opportunities. It can be argued that the anticipated freedom of learning by means of e-learning might reshape the existing arrangement through which they learn and develop knowledge. This eventually might create a new arrangement around learning opportunities for rural people, but only the one that can be based on trust relationships.

In the views of these member farmers, trust around e-learning has two implications. Firstly, from an operational perspective, the member farmers expect that a trusted local expert would facilitate their access to e-learning. For instance, they prefer ICT skilled local high-school teachers to help them with accessing the computer and Internet based e-learning option. It can be argued that ICT skills, moral influences, and universal social acceptance as a trust anchor within the communities make local high-school teachers

[264] It is a shared social value that rural people trust and respect teachers at any educational institution. However, in this case, member farmers indicate teachers at local high-school because GoB donated free laptops to all high-schools. Throughout this case, by teacher, they refer to the teachers at high-schools who are trained by GoB in ICT. Thus, saying that they rely on high-school teachers does not mean that they do not rely on or do not trust in the teachers at other education institutions. It is the teaching profession which brings in the trust relationships and respect.

their trusted opinion leaders for e-learning. It also reflects what Stewart (2003) argues for, that skills, moral influence and network bridging capacities can make a person an opinion leader and thereby aid the adoption of new technology in respective localities. Although these teachers are not usually considered as expert farmers by these member farmers, but they want to rely on their guided assistance to shared access to e-learning around agriculture because of the opinion leadership competencies of the teacher. Secondly, from a content perspective, the member farmers expect that the content used in e-learning is endorsed by the reputed experts they trust in, meaning they can rely on the credibility of the knowledge the content shares. However, they correlate this expectation mostly when they access e-learning in a self-directed manner, through television programmes. For instance, they claim that they can trust in the credibility of the content endorsed by Meraz [KC2], who is the producer of the only agricultural programmes these member farmers follow on television. Hence, trust in the content and in the facilitator, is a necessary condition for e-learning if rural people is to adopt it as a new means of learning and developing awareness, skills and knowledge that they value.

Adopting Sen's (1985, 1992) capability approach framework, it can be argued that trust works as an essential conversion factor when e-learning, by member farmers, is to be conceived of a new means of learning agricultural skills and developing related knowledge. This is because trust can convert e-learning; a method of learning that is inadequately conceived by member farmers, into a means of learning and developing knowledge in the areas of agriculture. Therefore, when trust is present, e-learning can bring new options for the ordinary rural people to learn, offering them a sense of freedom and supporting them achieving their wellbeing through agriculture, their primary livelihood option.

7.8. A gender-specific approach

This theme shows that when e-learning promotes learning opportunities in areas that relate to both men and women, such as agriculture in rural Bangladesh, then a gender specific approach to promote e-learning undermines the potentials of e-learning and remains underutilised. I discuss below the gender-specific aspects of Tech4Agro in terms of implementation design and selection of topics for the content.

According to the implementation design of Tech4Agro, member farmers are required to consult with designated facilitators or the computer-shop operators about their

agricultural problems. In the latter case they are required to visit the computer-shop, which is based in the local market. While for male farmers consulting with the facilitators (who were all male) or visiting the computer-shop at the local market is not a problem, this is not the case for women farmers. Given the level of persisting patriarchy in rural Bangladesh, women usually do not visit market places, which implies that women farmers would not be interested in accessing the computer-shops in order to engage with the e-learning services offered by Tech4Agro (Cain *et al.* 1979; Chowdhury 2009; Kabeer 1988; Kabeer *et al.* 2011). Also the conservative sociocultural norm that discourages women from interacting with males outside their families would not encourage women farmers to consult with the male facilitators. While Agro-Tech does not explicitly categorise Tech4Agro as a gender-specific initiative, by considering the gendered rural realities it can be argued that Tech4Agro was not designed appropriately to include women farmers as its members. As in Bangladesh, a significant portion of the total agricultural workforce are women, therefore the implementation design of Tech4Agro, which promotes e-learning based agricultural knowledge sharing, risks missing a considerable agricultural workforce to offer its e-learning opportunities (Sraboni *et al.* 2014). Member farmers, facilitators and computer-shop operators all state that they are not aware of any female farmer who joined in Tech4Agro as a member. The official website of Tech4Agro, which promotes success stories of its member farmers, also does not contain any mention of a female member farmer. Therefore, the particular implementation design of Tech4Agro makes it a gender-specific one, which thereby remains underutilised because it could not include female farmers to offer its e-learning based agricultural knowledge sharing support.

Along with Tech4Agro being gender-specific with regard to operational aspects, the content of the knowledge repository is also representative of particular agricultural activities that, in the patriarchal rural realities of Bangladesh, suit male farmers the most. This is because most of the content relate to field level activities carried out by male farmers, such as preparing the land for cultivation, selecting particular seeds to sow, applying particular fertilisers, insecticides or pesticides, and harvesting in the field. Female farmers in rural areas are usually involved in household level agricultural activities, such as post-harvest crop processing, homestead gardening, and managing livestock (Momsen 2004). Thus, the selection of topics for the content shows a bias towards agricultural activities typically performed by male farmers in rural Bangladesh. In this regard, Milad [PO12] shares:

> "It (knowledge repository) shows (shares) agricultural information which relate to field level work the men (farmer) do… (it) does not show (share) anything (agricultural information) that women (farmers) generally do."

Therefore, approaches of Agro-Tech with regard to the implementation design of Tech4Agro, alongside the selection of topics on agriculture for developing the content, shows implicit gender bias. Furthermore, this approach imprints a gendered division of labour, resulting in a gendered digital divide in Bangladesh (Tyers 2012). The top-down implementation approach of Tech4Agro can be argued to have caused this gender bias. It can be argued that the gender-specific operating ethos of Tech4Agro undermines women's contributions to agriculture in Bangladesh, and thereby lacks ensuring social embeddedness of Tech4Agro, and also underutilises the potentials of e-learning in this regard, perpetuating the existing inequalities along the gender dimension.

7.9. Preferences around facilitator

This theme demonstrates that with regard to selecting a facilitator to promote e-learning for rural farmers, Agro-Tech pursued a different preference to that of the member farmers. By doing so Agro-Tech chose a facilitator that did not reflect on the situated preference around facilitators, and, in this respect, could not appropriately socially embed Tech4Agro in the respective rural realities.

Agro-Tech could sense the need for a facilitator to aid the adoption of e-learning by rural farmers as a new means of learning and developing knowledge in agriculture. However, in selecting the facilitator it did not reflect on the preference of its member farmers. It did not follow any guideline while appointing facilitators except that the facilitator had to be a local male. Agro-Tech employed educated young male facilitators but they were not farmers by profession. In the rural realities farmers usually learn agriculture from members of the family who are involved in agriculture, expert local farmers and neighbouring farmers. This learning is grounded in trust relationships. Therefore, the involvement of a non-farmer young male as the facilitator could not convince them to learn and develop knowledge in agriculture through e-learning. Also the facilitators were neither known as experts in computer operating nor as trust anchors to the respective member farmers. Therefore, they were not motivated or inclined to accept the facilitators Agro-Tech employed. All the member farmers argue that they could learn with enhanced convenience and confidence through e-learning, if local high-

school teachers could step forward as facilitators with shared access to the computers at respective high-schools. In this regard Shamshu [BC57], a member farmer in the area where Dewan [PO13] worked, shares:

> "They (teachers) will do it better. We (community members) all can rely on them. They know how to operate computer. This (engaging teachers) is the best solution for us if we want to learn anything from Internet (e-learning). I do not know whether they will come forward for this support. ...It (high-school) is also very close to where we live…So school will be best place for us to access it (e-learning). We (the farmer) don't even need to go to market then (to visit the computer-shop)."

It shows that member farmers want ICT skilled local high-school teachers as their facilitators in order to access e-learning, and they prefer local high-schools as the points of access. It is also discussed in section 7.7 that, in spite of not being expert farmers, these teachers are trusted by the member farmers as their facilitators to enable them learn agriculture through e-learning, because of their overall intellectual competencies, moral influences and ICT skills. They believe that these teachers can help them with e-learning around agriculture and beyond. In this regard Sohel [BC58], a member farmer in the area where Dewan [PO13] worked, shares:

> "We (the farmer) do not want to access it (e-learning) by ourselves. We do not have time to learn computer (operating computer) and will not be able to buy it (computer) either. We even don't know much about these (computer, Internet and e-learning) and don't have time to learn these as well. We can fully rely on sirs (teachers) at school. They have profound knowledge on everything. As they are local, they can explain everything in a way we can understand, agriculture or whatever else we can learn…Most importantly, all might turn corrupted but teachers will not."

It shows that member farmers emphasise on the trust relationship and expertise in computer operating as the criteria while choosing their facilitators to adopt e-learning as a means of learning and developing knowledge in agriculture and beyond. Similarly, Stewart (2003) also argues that facilitators play a pivotal role in respective societies as opinion leaders while their ordinary members attempt to adopt new technology.

When Sen's (1985, 1992) capability approach framework is adopted, trusted ICT skilled opinion leaders as facilitators can be considered as an essential conversion factor in

order to convert the e-learning opportunities, which member farmers cannot attend by themselves, into new learning opportunities. Such opportunities also bring in freedom of learning to some degree. The roles of trusted ICT skilled opinion leaders as facilitators are essential because member farmers want to feel confident in their ability to best explain the content. They also want their facilitators to be skilled in ICT because they do not value learning the ICT skills required to pursue e-learning. This is because they want to save their time, energy and money, required to learn those skills, in order to meet their other necessities in their labour-intensive lived reality. Sen (1999) emphasises on considering what the individual values, while understanding her/his capabilities. Therefore, member farmers' preference for not striving for learning ICT skills to access e-learning opportunities needs to be accommodated if their capabilities are to be enhanced effectively in their labour-intensive lifestyle. The facilitators Agro-Tech employed did not meet all the criteria that member farmers want to see in their facilitator. Thus, it can be argued that either Agro-Tech could not sense the inherent values around learning which rural people regard, or their preferences around appropriate facilitators for e-learning, or it underestimated those values and/or preferences while designing the roles of the facilitators for Tech4Agro. Nonetheless, either way Agro-Tech could not socially embed Tech4Agro, in an appropriate manner, with regard to employing effective facilitators in order to motivate member farmers adopt e-learning to learn and develop agricultural knowledge.

7.10. Authority lies with government

This theme shows that with regard to the authority of establishing e-learning based learning opportunities in rural areas, member farmers, as well as the technopreneurs, prefer GoB involvements. This preference is embedded in their experiential understanding as developed through their lived realities.

All the member farmers want GoB to take the responsibility of offering computer and Internet based e-learning opportunities as a means of learning and developing knowledge for the ordinary rural people. They believe that government has the power and capacity to establish an e-learning system for those in situations of poverty in rural Bangladesh. They assert their trust and confidence in government in this regard, arguing that non-governmental initiatives do not target all the rural people and are not long-lasting. Firoz [BC59], a member farmer in the area where Rajekul [PO15] worked, shares:

> "Government can do it, if it wants. NGOs are also good but they are not permanent and they work for people selectively. After a particular period of time they leave or their projects stop. Not all the (rural) people can benefit by their work. …Government at least will never leave us."

It shows rural people's conviction in government authority. Firoz's [BC59] words also assert what Mazzucato (2013) also argues, that the government should take the responsibility of implementing innovations for its citizens. Both member farmers and the technopreneurs claim that trust in government initiatives, especially in the areas of agriculture, has been a persisting reality in most of the rural areas in Bangladesh. However, they also argue that the effectiveness of these initiatives substantially depends on respective local government officials, who implement these, and their level of dedication, which varies in different areas. Nonetheless, out of experiential understanding member farmers, as well as the technopreneurs, believe that GoB should take required initiatives to offer e-learning based learning opportunities to ordinary rural people.

Although Tech4Agro offers free information and knowledge sharing services to its member farmers, it has been at the cost of Internet usage and business hours of the technopreneurs. These technopreneurs also argue that in order to achieve an effective and qualitative change through e-learning, related initiatives should be organised by GoB, because they think that only then would e-learning based learning opportunities be more reliable and consistent. In this regard Shayedul [PO16] argues that:

> "Even if government makes loss (by establishing e-learning system), it will continue serving us because it can do that. But projects like this one (Tech4Agro) will never continue if they make loss."

It shows that rural people have a particular understanding/perception around the sustainability of the services non-governmental organisations offer. Like the technopreneurs, the two facilitators also share similar opinions in this regard and express their trust and confidence in GoB in conducting e-learning based initiatives, particularly for those living in situations of poverty. Although Tech4Agro provided some income for these facilitators, they argue that for greater benefit, government should take the control of similar initiatives so that e-learning can be made free, robust, and reliable. It can, therefore, be argued that government involvements can convert

e-learning opportunities into a reliable means of learning and developing awareness, skills and knowledge for rural people, by tapping those opportunities into a consistent learning system. Following Sen's (1985, 1992) capability approach framework, government involvement can thus be considered as a conversion factor.

Therefore, it can be argued that the authority lies with government when it is about establishing an e-learning system for learning and developing knowledge, for those living in situations of poverty in rural Bangladesh. However, Agro-Tech did not engage the government at any level throughout the implementation of Tech4Agro. Therefore, it can be argued that by not reflecting on the member farmers' and the technopreneurs' preference around who they want to implement e-learning initiatives in rural areas for those living in situations of poverty, Tech4Agro lacks the social embeddedness aspect of establishing an e-learning system that meets the expectations of its target learners.

7.11. Conclusion

This case shows that because of the sociocultural realities rural people live in and their labour-intensive lifestyles, they are motivated to adopt e-learning only when some preconditions are addressed properly. These preconditions are mostly about trust, local assistance and the type of content. They want local trust anchors as their facilitators who would help them to engage with e-learning through shared access. Furthermore, they would provide them with explanations of the content in local language. This provision would help bringing their trust in e-learning, address their language related barriers and facilitate their access to e-learning with local support. In the case of content, they prefer video content that demonstrates real-life evidences so that they can learn using the less imagination power. However, they want the content endorsed by the experts they trust in, particularly when they access e-learning in a self-directed manner, such as on television. My analyses also show that a top-down implementation approach with commercial motives and inconsistent funding is not effective in establishing e-learning as a means of rural people's wellbeing achievement through learning and developing awareness, skills and knowledge. Furthermore, excluding academics from contributing to the development of the agricultural knowledge repository raises issues around the politics of knowledge development. Similarly, by having a gender-specific approach e-learning initiative remains underutilised, particularly with regard to its involvements in the areas of agriculture. My analyses also show that authority lies with government with

regard to establishing an e-learning system for those living in situations of poverty in rural Bangladesh.

Chapter 8

Findings and analyses: The Internet-Freelancing case

8.1. Introduction

In this chapter, I present the findings and analyses based on the data I collected from the Internet-Freelancing case. My findings show that self-directed e-learning can enable web programming enthusiasts with basic ICT skills to become Internet freelancers[265], minimising barriers such as the gendered division of labour in ICT and limited institutional learning provisions. In this respect, it can work as an alternative to formal ICT education, and can enable web programming enthusiasts to become Internet freelancers and earn money. While web programming based Internet freelancing can bring economic empowerment for the Internet freelancers, it can not ensure their wellbeing around their social lives. In spite of income opportunities, Internet freelancing is not yet seen as an accepted profession by ordinary rural people. In addition to this social barrier, there also exist infrastructural barriers that limit potential for e-learning in rural areas. My analysis also shows that crowdsourcing can enhance the effectiveness of e-learning initiatives, but only when expert crowds are engaged in it through a gift relationship[266].

I discuss my findings below under seven themes and analyse my data using Sen's (1985) capability approach framework.

8.2. E-learning as an alternative to formal education

In this section, I analyse Raisul's [PO17] and his residential trainees' experience of e-learning during their web programming skills development for Internet freelancing purposes. In their experience, e-learning works as an alternative to formal ICT education, particularly with regard to skills development in web programming.

Raisul's [PO17] life experience shows that e-learning can work as an alternative means to learn and develop skills in web programming, particularly for those who are in disadvantageous situations, or in situations of poverty, who are unable to attend respective educational programmes. Raisul's [PO17] labour-intensive everyday life left

[265] Throughout my thesis, by the term Internet freelancer, I refer to Internet freelancer who specialise in web programming.
[266] It is a relationship among people for a common good which is grounded in altruism (Titmuss 1970).

him with little time for studies at school and college because he had to earn money for the family (see section 5.4.1). However, he was determined to learn computer operating skills and skills required for Internet freelancing, particularly for web programming. Learning computing at training institutions was expensive and he could not afford it. Spending time and money to learn computing from a training institution in the central town of the district would have been a luxury for him that he and his family could not afford. His disadvantaged realities left him with no choice but to manage some money from his income to learn computer operating from a local computer shop, instead of any computer training institution. He had to pursue this unusual approach as it allowed him the flexibility to study in his free time. His passion for learning computer operating was the key to making this type of study possible, despite his difficult labour-intensive everyday life. After learning computer operating, he bought a pre-owned computer of poor condition with his own income and opened a small computer shop. This computer shop became his learning centre where he enhanced his computer operating skills further, by pursuing a self-directed learning by doing approach. Browsing different websites on the Internet has been an effective means for him to learn and develop the skills he could not learn or develop otherwise. He has been enjoying this freedom of learning offered by e-learning, without depending on any institution, and without spending money for learning purposes. Raisul's [PO17] experience provides an example of Gulati's (2008) argument that Internet based e-learning can offer a low cost means of learning.

Raisul's [PO17] passion and the flexibility of e-learning together made a pathway for him to become a successful Internet freelancer in web programming, irrespective of his disadvantaged realities. Furthermore, his becoming an Internet freelancer in web-programming was unusual in the context of Bangladesh, because typically, only ICT graduates could become Internet freelancers in web programming. Raisul's [PO17] quest for knowledge on the Internet introduced him to the concept of e-books, which opened a new window of opportunity for him. He came to know about web programming based Internet freelancing through e-books and started learning web programming by searching for related content (written tutorials and worked out examples on web programming techniques) on the Internet by means of self-directed e-learning. All the content he found was in English, which made his learning experience challenging as it was difficult for him to understand everything that was written. However, he managed to learn all the required web programming skills in this way by

means of e-learning and never needed to attend any related institutional training. In this regard, Raisul [PO17] claims:

> "You know, in those days, in early 2000s, only students studying computer science could learn web programming and avail Internet freelancing opportunities. I had no formal education on web programming and could not study computer science at any institution or university either, but I was passionate about it. I had to struggle a lot to learn web programming all by myself, depending only on whatever resource is available on Internet. It was indeed unorganised way of learning, as there was no specific guideline, and thus, difficult to follow, but ultimately I could learn web programming absolutely from those online tutorials and examples. Today, those tutorials are abundant but those are still in English."

It shows that self-directed learning by means of e-learning empowered Raisul [PO17] with a learning opportunity to pursue his passion for web programming and become an Internet freelancer. It offered him a flexible learning opportunity, which allowed him to learn whenever he could manage time, though it required hard work to organise the content on the Internet and translate those into Bengali. It can be argued that with the help of e-learning, Raisul [PO17] could surpass the respective formal education options in Bangladesh, designed to learn web programming for Internet freelancing. E-learning has therefore been an alternative option for him to learn about his desired topics without relying on respective formal education opportunities.

Views from Raisul's [PO17] residential trainees also show that e-learning not only creates an alternative means to learn and develop knowledge on web programming for Internet freelancing, but it also reveals a loophole in the related provisions in formal education, particularly in the context of Bangladesh. Three of his thirty-five trainees are university graduates who have been studying computer science. However, they are passionate about joining in his residential training because they believe that by doing so they would learn web programming effectively. Rana [BC65], one of those three university graduates, claims:

> "At university they (teachers) only teach programming language to some extent, but to become an Internet freelancer in reality you need to know many other things, not only a few web programming techniques. He (Raisul [PO17]) teaches all these in Bengali, which is a big advantage for us that I think no university offers. I could learn all these (about web programming) through his website, but I just thought I would join him directly in this residential training."

It shows that, although universities in Bangladesh teach web programming to the students, but their courses do not provide the appropriate training required to work as Internet freelancers. It not only shows that e-learning in this instance works as an alternative to respective formal education, it also implies that sometimes e-learning is even more effective than the existing related options within the formal education at tertiary level.

While e-learning appears as an alternative means to learn and develop knowledge, it also needs the learners to have basic education[267] and basic ICT literacy[268] to benefit from it through self-directed learning. Although all the residential trainees are educated, most of them (thirty-two out of thirty-five) have no formal education in ICT or related subjects. However, they are confident that they can learn anything through e-learning beyond web programming, even if institutional support from educational institutions is not available. It shows that e-learning offers them with confidence and a sense of freedom in learning. They argue that the only difference between learning from Raisul's [PO17] online content through self-directed e-learning and the residential training is the team spirit. They also claim that dedication can replace the need for team spirit because anyone with full dedication need not attend any training session for team spirit and that Raisul [PO17] has already demonstrated this in his life. They think that e-learning can offer a sense of freedom when one has basic education, ICT literacy and access to ICT. Turjo [BC66], one of Raisul's [PO17] trainees, argues:

> "If no one is there to help you learn anything particular, you still can learn that from Internet. You can find solutions to different problems on Internet. You just need to know how to find respective pages (content) on Internet. If you just know that and can correctly write down what you want to know about, then you can find almost any information from Internet. And today, even if you make a spelling mistake, it (search engine) will suggest you the probable correct ones for you, when you search."

While it can be argued that this assumption that all Internet content is effective can be challenged, it is evident that self-directed e-learning is well accepted by the trainees.

[267] As per UNESCO (2007, p1), basic education implies the levels of education "beyond primary education and extending to junior secondary education". However, Raisul thinks that basic education implies the ability to read and write fluently, which also include Basic English language proficiency.
[268] It implies the ICT skills required to operate mostly computers, mobile phones, radio and television.

Therefore, it can be argued that self-directed e-learning works as an alternative to formal education in ICT, particularly with regard to skills development in web programming when the learner is educated and has basic ICT skills. Education and ICT skills can be considered as conversion factors when Sen's (1985, 1992) capability approach framework is adopted because these two factors can convert e-learning into a means of learning about the topics the user of e-learning wishes to know more about. As Sen (1985) conceptualises wellbeing as the achievement of a desired state of being or doing, e-learning, therefore, can be argued to facilitate wellbeing achievement by offering learning opportunities to learn what the user values and desires to learn. This section shows that for Raisul [PO17] and his trainees, e-learning works as an alternative to formal ICT education, particularly when it is about skills development in web programming.

8.3. A learning option to overcome barriers

In this section, I analyse how e-learning has enabled Raisul [PO17] and the followers of his online content to overcome some of the barriers around the gendered division of labour in ICT profession and institutional provisions for learning. Raisul's [PO17] e-learning initiative enables web programming enthusiasts to learn web programming for Internet freelancing purposes; in particularly, this learning option is significant in the context of Bangladesh because it supports women who would not otherwise be able to learn web programming by attending institutional trainings outside their homes. His e-learning initiative has been helping ICT enthusiasts, including the women, to join in the ICT profession and facilitate skills building in web programming by overcoming the limited institutional arrangements for related training opportunities.

E-learning in this case demonstrates informal ways of learning through electronic means, which are independent of the formal controls within educational institutions, and are open to all. Raisul's [PO17] initiatives offer free access to learn web programming to all who have basic ICT literacy and basic education, allowing them to operate computers, to access the Internet, and can make sense of his text and video content on web programming. To conform to the local conservative sociocultural norms, Raisul's [PO17] residential training opportunity is open only to male trainees. However, his e-learning initiative is open to anyone who has access to the Internet. His e-learning initiative has opened a window of opportunity, especially for the women who are keen to develop web programming skills for Internet freelancing purposes as a source of

income. Unlike men, women are unable to partake in web programming learning opportunities at training institutions; this is due to barriers such as the conservative sociocultural norms, gendered division of labour and persisting patriarchy, which prevent them from accessing places of learning outside their home (Choudhury 2013; Kabeer 1988; Kabeer *et al.* 2011). Conservative sociocultural norms usually discourage women to interact with men beyond their respective families. However, in spite of the persisting patriarchy, since the late 1970s young women in rural areas have been moving to the cities to work at readymade garments factories (Kabeer 1991a, 2000; Kabeer & Mahmud 2004). Nonetheless, women's participation in paid jobs outside their homes has still been met with opposition from the patriarchy (Choudhury 2013).

These sociocultural barriers are not an issue for the women who seek to follow Raisul's [PO17] online content, and get technical troubleshooting support from his page on the online social networking site, in order to learn web programming. Raisul [PO17] emphasises that Internet freelancing might become a convenient profession for the women in Bangladesh. In this regard, he shares:

> "Many women have been successfully following my online contents and some of them even have started earning through freelancing (Internet freelancing in web programming). They thank me on my page (on the online social networking site) for my voluntary supports. A few of them even call me misogynist because I cannot offer them residential training opportunity here... I think women enjoy benefits of this e-learning the most because normally they cannot avail similar trainings outside their houses."

It can therefore be argued that e-learning can support women and allow them to avoid some of the barriers they face while accessing training opportunities or participating in economic activities outside their homes. In this way, e-learning can empower Bangladeshi women to join the Internet freelancing profession, which they could not do before. This can change the realities of women in developing countries where women are argued to be comparatively less visible than men in ICT professions (D'Mello 2006; Gillard *et al.* 2008; Hafkin & Taggart 2001). In the case of women, a web programming based Internet freelancing profession conforms to the local sociocultural norms as women do not need to go out of their homes. In this regard, Raisul [PO17] argues:

> "It looks like it (Internet freelancing) is a profession for women actually. You don't need to go out and you can work from home and earn money. They (women) can work whenever they have time. It's flexible and this can help them make a convenient work-life balance. It matches perfectly with our social realities."

While Raisul's [PO17] argument shows that e-learning can enable women in Bangladesh to develop capability in order to achieve economic empowerment through Internet freelancing, it also passively accepts the conservative sociocultural norm that associates women's activities only within the household.

Raisul [PO17] claims that gender is hardly an issue for Internet freelancers because the microworks that are outsourced to online market places prioritise expertise, instead of the gender identity of the Internet freelancer. However, even in developed countries, there has been a decline in women pursuing ICT related professions, mostly due to gendered social realities (Valenduc 2011). Raisul's [PO17] following view shows that even though Internet freelancing appears gender inclusive; in Bangladesh this aspect can be experienced by only a few privileged women. He shares:

> "Many women Internet freelancing enthusiasts follow my contents to learn web programming. I checked some of their profiles on the social networking site. I found that most of them are urban or educated women who studied computer (subjects related to computing) earlier, and are from good (well-off) families. One thing is that, access (to computer and Internet) is not a problem for these women."

This demonstrates that only those privileged women who have access to ICT, studied ICT and are from well-off families can experience the gender inclusive aspect of Internet freelancing in Bangladesh. However, it can be argued that, to a degree e-learning offers both men and women the freedom to learn web programming in order to become an Internet freelancer. As a result, it can also be argued that e-learning can help minimise the gaps created by a gendered division of labour, particularly in ICT professions when, even in Western countries, notions of masculinity dominate (Ensmenger 2010).

Raisul's [PO17] e-learning initiatives have also enabled web programming enthusiasts who could not access institutional training opportunities due to the scarcity of or high

cost of such opportunities. All thirty-five trainees share that although they could not access institutional training opportunities, they have been fulfilling their desire by following Raisul's [PO17] online content in web programming. Particularly the rural web programming enthusiasts sometimes give up their desire to learn web programming because most of the training institutions are located in the urban areas and they cannot afford to stay there. A considerable number (eleven out of thirty-five) of Raisul's [PO17] trainees also confided that due to financial hardships they had to abandon their dream of learning web programming before they came to know about his e-learning initiative. The trainees who have adopted e-learning through Raisul's [PO17] initiatives could not learn web programming by any other means in their lived reality. His e-learning initiative, which can be accessed from any place where Internet connection exists, can therefore help learners overcome some of the barriers related to accessing institutions. However, it only works for those who have basic ICT skills and can pursue self-directed learning.

Therefore, it can be argued that e-learning can minimise gender division of labour by offering women the opportunity to learn web programming, even with the persisting patriarchy in Bangladesh. However, this claim is grounded in the assumption that women have access to ICT, particularly computers and the Internet, allowing them adopt e-learning at home without confronting the conservative sociocultural norms and patriarchal reality outside their homes. Nonetheless, this is not to say that women do not face a similar reality within the home. It can also be argued that e-learning can help its users overcome some other barriers related to institutional provisions for learning, such as time and place dependency, limited capacity, and coverage. However, this argument is grounded in the assumption that the user of e-learning is educated and has the required ICT skills.

8.4. Infrastructural challenges limit the potential of e-learning

In this section, I discuss some of the infrastructural and related challenges Raisul [PO17] and his trainees have been facing with regard to adopting e-learning. These challenges are argued to be acute in rural areas and include: poor Internet speed, limited commercial provision for Internet access, and the high cost of the Internet. Along with these rural area specific challenges, a national level infrastructural challenge around the international payment system is also alleged to limit the adoption of e-learning, particularly for the development of web programming skills in order to take up the

Internet freelancing profession. I also present what Raisul [PO17] and his trainees think need to be done to address these challenges.

Raisul [PO17] and all thirty-five residential trainees claim that the infrastructure in rural area is behind that in the cities, in terms of Internet speed and consistent power supply. Castells (2001) also highlights infrastructural issues as being one of the significant reasons for a persisting digital divide between rural and urban areas of the same country. Raisul [PO17] claims that when he is in his village, he faces difficulties uploading his e-learning content because of poor Internet speed. However, he does not have this same difficulty when he accesses the Internet in the cities when he occasionally visits. He argues that because of poor speed the already expensive Internet becomes more expensive, as sometimes he needs to upload the same content multiple times due to poor Internet speed. Raisul's [PO17] trainees also claim that in rural areas Internet speed is slower compared to that in urban areas. This is particularly problematic for them when communicating with people over the Internet through video call services, as part of their Internet freelancing profession. Raihanuzzaman [BC67], one of the thirty-five trainees, who lives in the district of Jessor[269], claims:

> "Internet speed is our (peer trainees) big problem. It significantly affects our client communication because we need to use video calls for this. I need to go to the nearby city for this reason because in my village the speed is very low. This is not at all convenient and it costs me more."

Most of Raisul's [PO17] trainees (thirty out of thirty-five) share similar experiences that are caused by low Internet speed. Sajid [BC68], a trainee who lives in a village in the district of Rajshahi[270], also shares:

> "I lost my best client because of this low Internet speed. One day, I failed to call him over Internet video call due to low speed and lost him forever. You know these days Internet freelancers are abundant, so sometimes clients just leave us (Internet freelancers) if we cannot communicate promptly. I worked so hard, eventually he became a good client as well; but due to poor Internet speed I lost him!"

[269] It is a district which is about 132 kilometres away from Kushtia.
[270] It is a district which is about 105 kilometres away from Kushtia.

It can therefore be argued that while Internet speed affects adoption of e-learning, it affects Internet freelancers even more who need reliable and consistent service when using video call services over the Internet.

Raisul's [PO17] trainees argue that the total cost of Internet access is higher in rural areas compared to that in urban areas due to slow speed and limited commercial options to access the Internet. They claim that in cities there are more options available to access the Internet as there are more commercial service providers. They also argue that Internet speed is also better in cities compared to that in the rural areas. Another issue almost all the trainees highlight is the lack of a consistent power supply. Power supply is not a problem for the case location in Kushtia because it is located near the only power station of Bangladesh, which imports electricity from India and offers consistent power supply to neighbouring areas throughout the year. However, trainees coming from other regions of the country face this power problem all year round. Therefore, the combined issues of Internet speed, cost of access to the Internet, and power supply have an adverse effect on Internet freelancers living in the rural areas in Bangladesh.

Raisul [PO17] and his trainees argue that GoB should take appropriate initiatives to address the above challenges they face in adopting e-learning for Internet freelancing purposes. In addition to the challenges around Internet speed, cost of access to Internet and power supply, they also face challenges around making or receiving international payments as part of their Internet freelancing profession. The ten practicing Internet freelancers among the thirty-five trainees claim that they face difficulties when taking up the microworks offered through online market places due to the lack of a proper online payment system that can support convenient international payments. [271] They claim that currently in Bangladesh only international credit card services offer convenient international payment services. However, this is limited to those who can afford that, let alone the rural web programming enthusiasts who live in situations of poverty. They argue that they lose extra money every time they receive international payments through the existing payment processing system they are using. They claim that the government should establish a convenient online payment system because the existing technological framework for international payments, which ordinary people can afford, is inconvenient. Therefore, it can be argued that infrastructural and related challenges have the potential to influence rural people's adoption of e-learning because

[271] Microworks are units of independent tasks that make a full work or a project.

poor Internet speed, inconsistent power supply, limited commercial provisions for Internet access and high cost of Internet access limit their Internet access. As per Sen's (1985, 1992) capability approach framework, ICT infrastructure can be considered as a conversion factor (Robeyns 2005) because it can convert ICT, the underlying technologies of e-learning, into a means of learning, by framing these within the platform of e-learning. Therefore, infrastructural and related challenges can be argued to limit the potentials of e-learning.

8.5. Crowdsourcing enhances effectiveness of e-learning initiatives

In this section, I discuss how crowdsourcing support from expert Internet freelancers makes Raisul's [PO17] initiative around e-learning more effective. This crowdsourcing support from expert Internet freelancers helps him in two ways: he receives support in organising and managing his initiative, and, at the same time, users of his content also receive expert on-demand support through his initiative, which complements their e-learning experience making it coherent and consistent.

Raisul [PO17] argues that it is a challenging task to offer effective training support for web programming for Internet freelancing purposes through any institutional initiative. He claims that government initiatives such as the Learning and Earning Development Project (LEDP), as well as initiatives from different training institutions, do not usually offer web programming training that employs adequately qualified expert web programmers because they are too expensive.[272] He claims:

> "An expert web programmer who works as an Internet freelancer can earn on an average $40 per hour. Who will give you that amount of money just for training the students (on web programming)? Government even pays considerably lower than any private training institution does, for conducting these trainings. So, logically, you can never expect effective training supports on web programming from institutional initiatives. Expert web programmers would rather work on their own for their own income than waste their valuable time for comparatively low paid training opportunities."

Raisul's [PO17] argument shows that it might be difficult to engage expert web programmers to train web programming enthusiasts through institutional initiatives. This is because the loss of earnings for their day-to-day work would not be recouped

[272] GoB has initiated the Learning and Earning Development Project (LEDP) in early 2015. It engaged four commercial institutions to implement it. The project offers skills training on web design and graphic design among only female enthusiasts who have completed their 12 years of education. It aims to enable them earn money as Internet freelancers.

through offering their expert support through these initiatives. Raisul [PO17] claims that another reason why expert Internet freelancers are discouraged to step forward to offer their support as expert instructors for institutional initiatives is that they prefer to maintain a low profile. Internet freelancing is still considered an informal economy in Bangladesh though the current government has started to promote it for the young Internet freelancing enthusiasts. However, reflecting on Raisul's [PO17] explanations above, it can be argued that offering effective and expert support through institutional initiatives is a challenging task in Bangladesh.

Initially, Raisul [PO17] used to offer technical support on web programming issues to the followers or users of his e-learning content all by himself. However, that used to delay his e-learning content creation and he also could not address the queries from all the learners within a reasonable time period. In order to address the need for expert support on web programming, Raisul [PO17] has integrated crowdsourcing support in his initiative. When he opened a page on an online social networking site to offer technical support (see section 5.4.2), he started to receive voluntary expert suggestions on that page as comments from web programming experts. He then formed a dedicated team comprising of seven expert web programmers from among the page followers to offer expert support in a consistent manner and to address the queries his content users might have. Members of this team have been offering expert support free of cost and with philanthropic motives. Raisul [PO17] claims that the spirit behind this expert crowd support for his initiatives developed out of empathy for his voluntary efforts. He also claims that now many other web programming experts, beyond the dedicated team, provide similar voluntary support. His trainees claim, that they find his crowdsourcing supported e-learning an effective means for developing web programming skills for Internet freelancing through a self-directed e-learning approach. While Raisul's [PO17] initiative on web programming skills development through e-learning can be credited to his individual efforts, the success of his e-learning initiatives are also due to the roles played by the expert web programmers for their voluntary crowdsourcing support. Without the prompt voluntary support from the expert web programmers, in the form of crowdsourcing, it would have been difficult for Raisul [PO17] to maintain an effective e-learning system on web programming. Raisul's [PO17] own web programming skills development was also supported by freely available online content, demonstrating another instance of how crowdsourcing support, which can be considered as an

illustration of collective intelligence or efficacy (Bandura 2000) on the virtual or online platform, can be of assistance in learning.

Voluntary expert crowdsourcing support provides a sense of freedom for both Raisul [PO17] and the learners who follow his e-learning content, the benefits of which are twofold. Firstly, Raisul [PO17] can enjoy the freedom to consider and access more options to offer expert support on web programming to the followers of his content in order to aid their e-learning experience. Crowdsourcing support therefore enhances his freedom or capability when seen through Sen's (1999) capability approach framework. This is because it offers him another means of providing effective e-learning opportunity around web programming. Secondly, web programming enthusiasts now have the freedom and choice to access learning opportunities with expert guidance, which related institutional training initiatives usually cannot provide. It also saves their time, money and efforts required to access expert support on web programming. Raisul [PO17] claims that without any effective supports from the GoB, Internet freelancers in this country have achieved recognition in a global online market place and expert crowd support can be credited with this achievement. He further claims that most of these Internet freelancers have achieved success in the same way he did – through crowdsourcing supported self-directed e-learning. He argues that crowds, when motivated by empathy for a philanthropic selfless volunteer initiator, act as an effective means to support initiatives around e-learning. This can be considered as the gift culture among the individuals connected online who "collaborate and exchange information freely in a climate of mutual respect" (Jones 2003, p358, see also Castells 1996; Giesler & Pohlmann 2003). As per Sen's (1985, 1992) capability approach framework, this expert crowd support can also be considered as a conversion factor (Robeyns 2005), which converts e-learning into becoming an effective means of expert supported learning experience.

It can therefore be argued that without the support from expert crowds around web programming, offering effective e-learning opportunity that supports learners with the development of web programming skills is a difficult task. This is mostly due to the high opportunity cost for the expert web programmers who would earn substantially more money by working as Internet freelancers than playing the roles of instructors at web programming training institutions. Voluntary crowdsourcing comes as a solution to this constraint when philanthropic initiatives can create an effective online platform.

Institutional initiatives might also benefit from this expert crowd support, though this case shows that expert web programmers prefer informal voluntary engagements with personally organised initiatives instead of with institutional initiatives in order to keep a low profile. However, personally organised initiatives might also be criticised for their dependency on only one individual and thereby weakening their long-term sustainability because there exists a possibility of a turn towards self-interest from the communal values (Wallace 2012), or, in the long run one person might not become enough to offer minimum required supports, thereby affecting the sustainability (Lampel & Bhalla 2007). However, Toyama's (2015) assertion shows his conviction that benevolent initiatives, even if those are personally organised, are essential in today's world. He argues that: "In the twenty-first century, we have plenty of packaged interventions. What we need more of are the right kinds of heart, mind, and will" (Toyama 2015, p214).

This case illustrates what Toyama wants to see, because without Raisul's [PO17] philanthropic approach, his initiatives could not have gained acceptance among the contributing expert web programmers, or among the followers or users of his e-learning content.

8.6. Language as a persistent challenge

In this section, I show that while the use of native Bengali language considerably enhances prospects of e-learning for web programming enthusiasts who want to pursue career in Internet freelancing, the earning potentials through Internet freelancing depend on a proficiency in English language, particularly in business English.[273] First, I show that use of Bengali in the content considerably enhances intelligibility of the content on web programming and helps web programming enthusiasts to learn effectively. Then I show that to benefit financially from web programming based Internet freelancing, Internet freelancers need to have basic competencies in business English or communicative English in order to be able to harness the global opportunities in Internet freelancing.

Language is a critical cultural component that plays a vital role in developing skills in web programming through e-learning for Internet freelancing purposes. Proficiency in appropriate language is also crucial when applying those skills to access microwork

[273] Particular styles of English language used for business communication purposes.

offers on online market places that are advertised by people from around the world. Use of native Bengali language in all the video and text types of content is the unique characteristic of Raisul's [PO17] e-learning initiative. This brought him and his initiatives recognition among web programming enthusiasts in Bangladesh, particularly among those who are keen to pursue Internet freelancing as a profession. However, all the content Raisul [PO17] accessed online when he learned web programming were in English. Fortunately, he had basic competencies in English. Nonetheless, sometimes he faced difficulties in understanding some English content while pursuing his self-directed e-learning endeavours. This can be attributed to the difficulty of explaining a complex process through written descriptions (Sennett 2008), which is made even more difficult if they are written in a foreign language. Raisul [PO17] develops video content with real-life demonstrations and uses native Bengali language so that users of his content do not face the same language related difficulties he faced throughout his own e-learning endeavours. Raisul's [PO17] trainees argue that usually only the educated people who understand English can benefit from e-learning, because most of the contents they have accessed are in English. All thirty-five trainees state that Raisul's [PO17] Bengali content on web programming are the most effective ones they have ever come across while learning web programming through e-learning. In this regard, Mokbul [BC71], one of Raisul's [PO17] trainees, shares:

> "His (Raisul's [PO17]) Bengali contents made it (learning web programming) so easy for us (those who follow his contents)! Particularly his video contents save a lot of our time because we can learn faster. He himself demonstrates everything in the videos. We can understand better through watching his videos… There exist no Bengali tutorials (contents) on web programming, except his ones. These are very useful."

It shows that use of native language (Bengali in this case) enhances intelligibility of the e-learning content, particularly when real-life video is used. Raisul's [PO17] Bengali content thus resolves the problems around intelligibility of the content demonstrating web programming techniques, which usually use English. Therefore, content in native languages have substantial impacts over the effectiveness of self-directed e-learning.

Bengali content enhances intelligibility of the content and fosters self-directed learning. However, in the case of web programming based Internet freelancing, these might not suffice to enable freelancers to earn money by completing microworks advertised on the

online market places. The ten practicing Internet freelancers among the trainees argue that they also need command over communicative English (business English) to be able to maintain professional contacts with the clients they interact with on the online market places where people from around the world interact with one another. Sometimes a lack of business English affects even skilled web programmers as they fail to convince prospective clients to hire them for their microworks. Raj [BC72], one of Raisul's [PO17] trainees, shares:

> "Writing emails and talking over video calls with foreign clients in English are different than what (English language) we (peer trainees) have learned at school and college. It needs a different kind of skill in English and is equally important if you want to earn money from Internet freelancing. Sometimes even less skilled (in web programming) freelancers (Internet freelancers) can manage good (well-paid) work offer (microwork) if they are skilled in communicative English."

It shows that one needs to know both web programming and business English to succeed in web programming based Internet freelancing profession by accessing global opportunities for microworks. In the case of Internet freelancing profession, sometimes a lack of competency in business English can also undermine the expertise in web programming.

Therefore, use of native language in the e-learning content can influence web programming enthusiasts to adopt e-learning as the new means for learning and developing related knowledge and skills. However, in the case of accessing Internet freelancing opportunities, availability of content in native language might not eliminate the need for developing competencies in foreign languages, particularly in English, in order to maintain communications with foreign clients. English is usually used for communications among Internet freelancers and the providers of microworks. When seen through Sen's (1985, 1992) capability approach framework, it can be argued that competencies in English language or in language in a broader term, works as a conversion factor (Robeyns 2005). This competency can convert e-learning into a means of developing skills in Internet freelancing, when related content in a native language are absent. Furthermore, it can also convert online market places into sources of livelihood opportunities. Competencies in English offer a sense of freedom to the ICT skilled individuals to choose Internet freelancing as a livelihood option. However, for the non-English speaking web programming enthusiasts, language therefore remains

a persisting challenge to pursue e-learning in order to develop related skills and to adopt Internet freelancing as a profession.

8.7. Economic empowerment and wellbeing

In this section, I show that while web programming based Internet freelancing has empowered Raisul [PO17] and some of his trainees in economic terms; it has not brought their expected social recognition. As a result of this lack of social recognition for their profession they could not eventually achieve a sense of wellbeing, because they could not live their desired social life. I discuss about these below.

Internet freelancing has been offering Raisul [PO17] an opportunity to earn substantial amount of money. This enables him to escape from situations of poverty when measured by the poverty line concept, based on minimum expenses for basic needs. His economic empowerment is now ensuring good meals, better clothes, a safe and comfortable house, and other necessities for him and his family. Similar positive changes have also been experienced by the ten practicing Internet freelancers among the thirty-five trainees. However, these positive changes do not indicate that economic empowerment can always bring social esteem and recognition, and thereby wellbeing achievements around the social life. This is because irrespective of Raisul's [PO17] substantial economic empowerment through his Internet freelancing profession, he could not uplift his and his family's social status to his expected level, thereby impacting on his sense of wellbeing. He states that owning the tallest brick built building in his village and earning good money could not convince the people in his village to consider his profession socially acceptable. As a result, he still feels a need for gaining a Master's degree (see section 5.4.1) to get him and his family the expected uplift in social status. This is because according to the sociocultural norms in his village, higher education (a university degree) is one of the emblems of prestige and higher social status for individuals and their respective families. He strives for the Masters degree and spends time on it because his economically empowering Internet freelancing profession could not bring his desired social life and thereby wellbeing. Raisul [PO17] claims that rural people's lack of awareness about the Internet and Internet freelancing is one reason why Internet freelancing is not socially accepted by them as a good profession. Therefore, it can be argued that Internet freelancing might bring wellbeing for the respective Internet freelancers through economic empowerment when it is socially accepted as a profession by local people.

The ten practicing Internet freelancers among the thirty trainees also claim that they have been facing similar challenges regarding social acceptance of their Internet freelancing profession. These trainees live in rural or suburban areas and in those areas Internet freelancing is not considered as a socially acceptable profession. They argue that the underlying reason for this might be that ordinary people do not have a clear understanding of this profession and they do not want to rely on its prospects. They also think that ordinary rural people consider Internet freelancing as a risky profession because usually it does not ensure a fixed income. Raisul [PO17] thinks that the virtual nature of engagements in Internet freelancing could also be another reason for this lack of social acceptance. He argues that in the case of most other professions, individuals are affiliated with a physical institution or have involvements outside the houses. However, this is not the case with Internet freelancing. The trainees also share another aspect of this social acceptance scenario, which they claim has been affecting the subjective aspects of their wellbeing to a considerable extent.[274] They all argue that the lack of social acceptance of Internet freelancing as a profession is constraining them from building social relationships through marriage. In this regard, Rubel [BC73], one of the ten practicing Internet freelancers, claims:

> "I have been earning through Internet freelancing since last couple of years now. I'm not jobless; rather I earn more than most of my friends do. However, no father wants to get his daughter married with me. They (potential bride and her parents) think it (Internet freelancing) is not a profession at all. They (parents of a potential bride) would rather get their daughter married with a service holder even if he earns inadequately. … I think government should take some initiatives to develop awareness about our profession among ordinary people otherwise young people eventually will lose their motivation to accept Internet freelancing as their profession...We (Internet freelancers) feel so unfortunate."

It shows that lack of social acceptance of Internet freelancing as a profession by ordinary rural people affects the social lives of the respective Internet freelancers.

Despite earning a good income from Internet freelancing, these Internet freelancers are not recognised as professionals by their local communities. As a result, although Internet freelancing can bring economic empowerment, it might not bring wellbeing along with it. However, this is not to say that economic empowerment cannot bring

[274] The subjective aspect of wellbeing implies the cognitive assessment of life made by the respective individual (Diener *et al.* 2002).

wellbeing. In economic terms, these Internet freelancers can escape from poverty situations when poverty is measured on the basis of the poverty line concept (see sections 2.2.1 and 2.2.2). However, Sen's (1985, 1999) conceptualisation of poverty, which is intimately related to that of wellbeing, implicates a different perspective. As these Internet freelancers do not have the freedom or capability to function or participate in their respective societies in the ways they desire, such as getting their profession and resulting economic empowerment recognised by local people, or, building a social life through marriage, they can be considered to be in situations of poverty irrespective of their economic empowerment. At the same time, it also indicates that they could not achieve their wellbeing in this respect. In this particular instance, the means of economic empowerment is not socially accepted or appreciated by respective local people, which is why Internet freelancers' considerable economic gains could not bring their wellbeing. These unfavourable consequences of pursuing Internet freelancing as a profession discourage Internet freelancing enthusiasts to access e-learning to learn web programming. Therefore, it can be argued that Internet freelancing can bring economic empowerment but this economic empowerment does not always result in wellbeing achievements around having a dignified social life.

8.8. Trust is essential for effective e-learning

In this section I show that trust is considered essential for effective e-learning by those who pursue e-learning to develop skills on web programming, and by the expert crowds who offer their voluntary supports to complement the learning experience. The influence of materialised gain and empathy are found to be prominent in shaping trust relationships among them. The influence of the latter can also be considered as the basis of the development of a gift relationship between the expert crowds and the learners who pursue e-learning with their support (Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966). I discuss about these below.

Raisul's [PO17] trainees claim that trust has been an essential factor behind their adoption of e-learning in order to develop web programming skills. They share that such a trust relationship is developed when they can materialise benefits by following e-learning content contributed by someone expert in the respective subjects. They argue that there exists abundant e-learning content on the Internet but not all are equally useful and effective. A trust relationship gets developed only when they can successfully learn web programming from following particular e-learning content on the Internet. They

start trusting the person who contributes to the development and/or sharing of the content on the Internet. They argue that developing trust around e-learning is not difficult for them, because they can easily verify the usefulness or effectiveness of the respective content. The other side of this trust relationship is grounded in a relationship that can be considered as a gift relationship between the learners and the expert crowd who have been providing e-learning content and related knowledge support (Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966). According to Raisul [PO17] and the ten practising Internet freelancers, this trust relationship is developed mostly through responsible philanthropic activities from the expert crowds. They also mention that empathy and referrals from trusted sources are the other underlying rationales behind the development of this type of trust relationship among learners who pursue e-learning and the expert crowds who offer their voluntary supports for free.

All the residential trainees claim that they rely on Raisul [PO17] and trust in his expertise and his e-learning content because they have been benefiting from following his content. About half of the trainees (fifteen out of thirty-five) claim that they started following his e-learning content once they heard about his e-learning initiative from their trusted referrals through the online social network. Therefore, it can be argued that social relationships also play a role in establishing trust in e-learning, which conforms to Granovetter's (1983, 1985) claim around the role of social relationships in developing trust. Raisul [PO17] acknowledges that expert Internet freelancers stepped in to support his e-learning initiative with their voluntary expert support as the expert crowd, only out of empathy for his selfless voluntary efforts for the web programming enthusiasts in Bangladesh. In this regard he shares:

> "When they (expert Internet freelancers) found that I have been trying to help others at my own expense and that freelancers (followers or users of his e-learning contents) find it effective, they became sympathetic, started trusting my initiative and started offering their helping hands… They (those who follow or use his contents) rely on my contents because they say that those actually work and help them learn effectively."

The expert crowd's approach towards Raisul's [PO17] initiative exemplifies a gift relationship grounded in Raisul's [PO17] altruistic efforts, and the effectiveness of his initiative. While this approach from an expert crowd might not be considered as a

rational economic approach, it is this approach that brought trust in Raisul's [PO17] e-learning initiative and eventually made it an effective one.

Trust is therefore an essential factor for effective e-learning, which can be considered as a conversion factor (Robeyns 2005) when seen through Sen's (1985, 1992) capability approach framework. It converts Raisul's [PO17] e-learning resources into sources of learning to develop skills in web programming. It also converts expert Internet freelancers, scattered around the world, into e-learning resources for web programming. Trust motivates these web programming enthusiasts to adopt e-learning and enables them to become Internet freelancers, which they have been expecting to become. It can also be argued to facilitate their wellbeing enhancement from the perspective that it helps them achieve what they value and desire in their lived reality.

8.9. Conclusion

This case illustrates that Internet freelancing can enable even those living in situations of poverty to achieve economic empowerment. However, this economic empowerment cannot bring a sense of wellbeing around social life for the Internet freelancers because it is not recognised as a socially acceptable profession. For this reason, the male Internet freelancers encounter challenges in building their desired social life through marriage. When analysed using Sen's (1985) capability approach framework, it can be argued that this economic empowerment could not bring wellbeing for the Internet freelancers. Furthermore, economically empowered Internet freelancers are demotivated to pursue Internet freelancing due to their inability to lead the social life they value and desire to lead. However, e-learning support for web programming skills minimises the gender division of labour because women can join in the ICT profession while being at home and without encountering barriers such as conservative sociocultural norms. Nonetheless, this advancement in gender equity through Internet freelancing is grounded in the passive acceptance of conservative sociocultural norm, which expects women to be engaged with work within the home only. The prospects of e-learning supported Internet freelancing professions also stand on the assumption that the learners are educated and have ICT skills and access to ICT. There also exists a precondition for the effectiveness of e-learning, particularly when it aims to support skills building in web programming for Internet freelancing purposes. The effectiveness lies in the expert crowd support or crowdsourcing, which resembles a gift relationship between the expert

crowds and the learners (Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966).

Chapter 9
Discussion

9.1. Introduction

Drawing on the research presented in the previous chapters, this chapter will extrapolate my findings and discuss their implications. The chapter has five main sections where I discuss my findings based on the three cases and present discussions around the four research questions respectively. I conclude this chapter by summarising the main findings around my research questions.

9.2. Discussion of findings

My discussion is grounded in the analysis presented in chapters six, seven and eight. In these chapters I have demonstrated that e-learning contributes, although not to the extent it is anticipated by the development and ICT experts (see section 4.4), to development. It does so in the following ways: it promotes better farming practices, leads to an increased awareness about women's reproductive healthcare, as well as an increased awareness about entitlements for those in situations of poverty provided by GoB as safety-net[275] measures. Although the views of the development and ICT experts indicate that e-learning has the potential to achieve even more developmental outcomes that go beyond the initial objectives of the Cycle-Women, the Computer-Shop and the Internet-Freelancing cases presented here, rural people do not have adequate ideas about e-learning and its developmental potentials. In the following section, I present my discussion under specific themes.

9.2.1. E-learning and some of the barriers to learning

All three cases show that e-learning can help rural people overcome or minimise some of the challenges around learning. The following are these challenges or barriers.

- Patriarchy which limits women's access to learning
- Labour intensive lifestyle
- Lack of solvency or poor economic status which limits availing learning options
- Institutional capacity constraints around supporting informal means of learning

[275] It is an initiative taken by GoB to protect those in situations of poverty from falling down to abject poverty situations through offering mostly cash transfer supports. It also offers food and other kind supports for similar purposes (Ahmed, I. 2013).

Some other challenges include conservative sociocultural norms, such as considering learning about reproductive health as a taboo; and gender roles which reinforces the idea that women's role is in the home (Cain *et al.* 1979; Chowdhury 2009; Momsen 2004). In the following paragraphs, I discuss these issues in light of the three cases.

With reference to the Cycle-Women case, cycle-women can now read online newspapers free from cultural impediments such as patriarchal influences which demotivate women in accessing printed newspaper. Through this engagement they can develop a greater awareness on issues relating to their everyday life as well as keep informed about areas of interest that range from job opportunities to weather forecasts. The main areas women look into are different ICT skills, ICT based job opportunities, news on local affairs and activities they want to pursue as habit such as techniques on needlework. For the women in this case, e-learning offers them some level of freedom as they would have limited access to printed newspapers and institutional sources of knowledge. E-learning allows them the opportunity to learn about many health issues, new agricultural techniques and safety net supports provided by GoB. Prior to the introduction of e-learning, their access to these was limited due to their gender identity and, more broadly, due to a lack of institutional provisions to learn about these. Access to e-learning with the help of computer and Internet gives these women a greater confidence and a sense of control over their learning behaviour (see section 5.2.3). Sen (1992) terms this particular agency as capability when it is linked with wellbeing achievements. By enhancing their capability to learn, e-learning thus offers these women a better sense of wellbeing.

In rural areas women usually have little freedom to be mobile outside their homes due to conservative sociocultural values and patriarchal influences (Cain *et al.* 1979; Chowdhury 2009). As the kind of e-learning cycle-women offer is home-based, cycle-women's service users can now learn about agricultural good practices, health and hygiene issues, and their rights and entitlements. In particular, they can now access information about reproductive health issues, which they perhaps would not have had prior to this engagement, even if mobility was not constraining them. E-learning is thus directly empowering cycle-women to have more control over their wellbeing through learning and also helping them to empower their service users in a similar manner.

In the Computer-Shop case, male farmers have the opportunity to learn some of the agricultural practices with the help of facilitator supported e-learning. Given their labour intensive lifestyle, this approach to learning offers them greater flexibility with both time and location. However, Tech4Agro could not engage farmers in its facilitator supported computer and Internet based e-learning system in the way that was anticipated. Instead, television based e-learning has had more impact and has been a consistent source of learning for them since the early 1980s'. E-learning is the only means for most of these farmers to learn new agricultural techniques and advanced knowledge in agriculture. Other than television based e-learning option, farmers would learn only through informal social interactions with other farmers. Farmers argue that with the development of new and advanced agricultural techniques, these interactions have become inadequate. Foster and Rosenzweig (1995) also identify this particular constraint of 'learning by doing' which farmers face. Farmers depend on local agricultural commercial sales people to find out about the utility of currently available pesticides, insecticides, chemical fertilisers and hybrid seeds in the market. This provides them with some information about the advantages and disadvantages of these products. However, these commercial sources do not provide an independent assessment of new techniques and products because they only share information about the products they sell. They also do not offer information about farming practices, or even the possible disadvantages of using the products they sell. This mode of gaining information is not an open and independent learning opportunity but instead is a marketing exercise. An educative approach would be one that gives the farmers a wider and deeper understanding of new knowledge in agriculture that would enable them to be informed consumers of agricultural products. Although the GoB provides some educational provisions for rural farmers such as through agricultural extension programmes, member farmers find these inadequate and targeting mostly the big farmers who are economically more empowered. Therefore, small farmers are excluded from learning opportunities other than informal social interactions, watching television and asking the local agricultural commercial sellers. E-learning thus can address this gap in meeting the learning need for all the farmers by providing learning opportunities through accessible ICT; this may be through television or through computer and Internet based learning with the help of local facilitator.

In the Internet-Freelancing case, the life experience of Raisul [PO17] shows that e-learning can provide opportunities to learn web programming. Institutional initiatives

such as training courses often do not provide the relevant education to learn about programming at the level required to become freelance programmers to work in the online market place. Furthermore, Russell's trainees argue that many people cannot afford the time or the money to attend formal education where they can learn about programming or study ICT at tertiary level. In Raisul's [PO17] case, e-learning based self-directed education helped him to gain web programming skills through self-directed learning and enabled him to achieve substantial economic reward through his Internet freelancing profession. However, despite being a potential source of economic empowerment, Raisul [PO17] and his trainees experience that in rural areas Internet freelancing is not considered a socially accepted profession. As a result, Internet freelancing leads to economic empowerment but it does not bring social recognition. This means that those who undertake Internet freelance work face additional challenges to foster their wellbeing.

As with the other cases, the Internet-Freelancing case shows that e-learning offers an alternate provision for learning with the advantages of working at a time and place which best suits the individual. It also minimises dependency on institutions for learning purposes. This flexibility is proving to be beneficial to women in particular, who would otherwise face difficulties in accessing institutional learning opportunities in the persisting patriarchal realities. For example, Raisul [PO17] says that women Internet freelancers follow his contents to learn web programming, without being required to attend training institutions outside their homes. However, patriarchal power relationship within the households substantially limits women's access to ICT in Bangladesh (Hultberg 2008). This challenge in accessing ICT limits the potential of e-learning, which could have been effective for gender equity in digital inclusion.

The Internet-Freelancing case evidences that self-directed e-learning is less expensive than other forms of learning opportunities such as attending any educational or training institutions. For instance, some of Raisul's [PO17] trainees could not afford institutional provisions for learning web programming, but they could learn it following his contents through e-learning. However, one also needs to have some level of basic education and

ICT skills to directly benefit from e-learning.[276] It might be argued that e-learning appears as an emancipatory option for learning when self-directed learning is pursued (Fischer & Scharff 1998). However, this aspect of e-learning depends on availability of required technological infrastructure.[277]

As demonstrated, there is evidence across all three cases that e-learning can minimise or remove some barriers to learning for rural people. In particular, the cases show that rural people, such as the cycle-women, the farmers, and Internet freelance workers in rural areas can adapt e-learning in ways which can enhance their wellbeing by letting them pursue the course of action they value. In these cases, e-learning enables them to learn what they feel is important to them and within the limitations of their respective contexts it thus offers them a degree of freedom. This resulting freedom to pursue learning can be considered as capability enhancement as argued by Sen (1985) in his capability approach because it enables rural people to take up a course of action (learning through e-learning) they value. Furthermore, e-learning gives them access to new learning options which previously they could not pursue and thus it brings some level of empowerment for them (Kabeer 1994, 1998). This empowerment leads to their sense of wellbeing as it brings about the state of being they desire and value (Sen 1993). For example, learning good practices to maintain health and hygiene (see section 6.7), developing agricultural knowledge that yield more crops and increase income (see sections 6.6 and 7.3), and developing professional skills, which bring economic gains and better quality of life (see sections 8.2 and 5.4.1). In addition to offering rural people freedom to pursue learning, e-learning also makes a positive contribution to their way of living which can be argued as instance of their wellbeing achievement.

9.2.2. Trust and adoption of e-learning

Trust is an essential condition to meet if e-learning is to position itself as a development tool. In order to understand the significance of trust in this regard, it is important to understand the factors that lead to the development of trust in rural realities, and how

[276] By the terms 'educated' and 'uneducated', I mean what rural respondents of all my three cases imply by those terms. They use the term 'educated' to categorise those who have completed 10 years of formal education and passed the Secondary School Certificate (SSC) examination, or studied beyond that; and they use 'uneducated' to categorise those who have not attended any schooling, or could not complete the 10 years of education. Culturally, this 10-year education is considered by these rural respondents as a benchmark to consider whether a person is educated or not. SSC examination is institutionally considered as equivalent to the General Certificate of Education (GCE) Ordinary level ('O' level).

[277] It includes high capacity Internet connectivity, adequate provisions for accessing Internet, required contents and favourable policies.

trust is developed around e-learning scenarios. Although the concept of trust can be examined from a psychological perspective in considering the closely-knit society of rural Bangladesh, I adopt a sociological perspective to analyse issues around trust.[278] This approach can be justified as e-learning is a new technology-oriented interaction that requires its users to go through a prolonged social process of learning (Freeman 2000). Reflecting on the three cases, I discuss different related issues around trust below.

To address trust in rural Bangladesh, it is important to recognise that in such a culturally homogeneous society, rural people's learning has mostly been around lives and livelihoods (Chambers 1983; Islam 1981).[279] My research shows that rural people usually learn through informal social interactions, such as 'learning by doing' with neighbours or family members, talking to them, and by watching television especially when they want to learn agricultural techniques. However, these learning practices are grounded in the deep rooted notions of trust among those concerned with and engaged in learning. My research identifies different factors which influence the development of trust in rural realities where learning is concerned in the particular context of my research. The comparatively strongest factor is moral influence of a person who is considered by rural people as having a high moral. For instance, the moral influence of the teacher positions them as their expected trusted expert facilitators for e-learning even though they are not institutionally recognised as experts in the areas important to rural people for their wellbeing achievement, such as agriculture and health (see sections 6.6 and 7.7). Realised gain is another factor which develops a sense of trust when one realises benefits from learning (see section 7.7). For instance, farmers trust Meraz [KC2] because they have been benefiting by following his television programmes which demonstrate different agricultural techniques. Social relationship, proof of success, endorsement by trusted experts, reliability, and usefulness also develop notions of trust even if one has not yet realised the anticipated benefit in reality. For instance, all of my rural respondents trust Meraz [KC2] (the veteran agricultural activist) and follow his television programmes, although some of them are not actively involved in agriculture (see section 6.6 and 7.7). Social identity of the person who facilitates learning also shapes rural people's trust because it is a common practice among them that they put higher priority on the person who shares knowledge than the

[278] Bangladesh is considered as one of the south Asian countries where closely-knit societies are predominant unlike the situations in the developed countries in the west (Devine *et al.* 2006).
[279] Societies in Bangladesh are mostly culturally homogeneous except those in the few hilly regions of the country. However, these hilly regions constitute a considerably small part of the whole and are also not within the scope of my research.

merit of the knowledge itself. For instance, in the given persisting patriarchal rural reality, men usually show less inclination to trust a woman as the person from whom they can learn (see section 6.6). The above mentioned factors sometimes relate to each other but the patterns of their relationships depend on the context and the actors involved in the trust relationships.

For the rural people at locations of the Cycle-Women and Computer-Shop cases, respective projects Tech4Women and Tech4Agro are the only sources of high-tech (Internet and computer) oriented e-learning. However, they have been pursuing e-learning with the help of low-tech options (such as television and radio) since the early 1980s. Nonetheless, their learning experience through television has never been termed as e-learning though it has been a form of learning with the help of electronic means. I discuss development of trust around e-learning for the above two broad scenarios in the following manner.

- Facilitator assisted e-learning
- Self-directed e-learning

Facilitator assisted e-learning describes any situation where the learners need assistance and cannot learn using the electronic means on their own. The assistance may be directed towards the provision of access and/or ICT skills support. It may also be concerned with explaining the content of the learning material in order to enhance understanding and to overcome language barriers. In the case of facilitator assisted e-learning the development of trust in e-learning depends on three factors: a) who assists or facilitates, b) characteristics of the contents, and c) who implements the e-learning initiative. Among these three factors, who assists or facilitates e-learning can be seen to have a stronger influence over the merit of the contents in developing trust in e-learning. For instance, the Cycle-Women case shows that in spite of having ICT skills, owning ICT devices and having access to authentic content, cycle-women could not motivate local farmers to trust in e-learning with regard to agriculture (see section 6.6). The comparative strengths of these three factors vary depending on different scenarios and those involved.

The development of trust between the facilitator and the learner depends on the socially constructed identity of the facilitator and his/her command over ICT skills. For instance, both the Cycle-Women and Computer-Shop cases demonstrate that although ICT skilled local facilitators are appointed but rural people are not inclined to accept them as

their facilitators who they can trust in for learning purposes. The main reason for this appears to be their social identity as ordinary local people and not being a local trust anchor. Irrespective of their gender identity, age, and professional and educational status, they rather demand local high-school teachers who are trained in ICT by the GoB to become their facilitators if e-learning is to be adopted. While rural people usually consult with their trusted local expert farmers for agricultural problems, in the case of e-learning support in any area including agriculture, they trust in local high-school teachers even if those teachers are not experts in agriculture. This is not to say that they do not trust local expert farmers anymore; rather, it is their lack of ICT skills and their inability to support rural people's access to shared ICT which make them less preferable for e-learning supports around agriculture. Therefore, they consider the involvement of a trusted ICT skilled facilitator crucial when e-learning is to be pursued for developing awareness and skills.

This need for trust in the facilitator has led to high-school teachers being held in high regard. This is because rural people have absolute trust in teachers, due to their moral influence, expertise, and social network bridging capacity. According to Stewart's (2003) conceptualisation of opinion leadership, these attributes characterise ICT skilled high-school teachers as opinion leaders for rural people in the areas of e-learning. This sort of trust in teachers is more positional than personal and has been a cultural norm in Bangladesh for generations.[280] Rural people irrespective of their gender identities and positions in the respective societies do not hesitate to consult with teachers on any issue. Sztompka (2000) also considers teaching as a trusted social role. However, according to Misztal's (1996) conceptualisation this sort of trust can be considered as a habitus on account of the stability aspect, because in rural realities it is a taken for granted that teachers can always be trusted.

Social relationships can bring in initial trust in the respective facilitators, which stands on Granovetter's (1983, 1985) argument that trust can be built on social relationships. However, both the Cycle-Women and the Computer-Shop cases evidence that in case of development of trust in e-learning in rural reality, effectiveness of social relationship is limited. The Cycle-Women case shows that cycle-women can engage neighbouring

[280] The high-school teachers who I interviewed are all male. Therefore, it would be interesting to do further research to understand whether the unanimous trust in high-school teachers is influenced by their gender roles, though rural people irrespective of their gender identity trust in these teachers in a similar manner.

rural women in their e-learning sessions by means of social relationships, but most of those women join in the sessions for reasons other than the intended learning purposes (see section 6.10). The Computer-Shop case also points to similar phenomena where a facilitator could establish initial trust in him by means of kinship but could not convince his relative to trust him as the gateway to learn agricultural know-how through e-learning (see section 7.7). Therefore, trust in the facilitators is an essential condition if e-learning is to be adopted by rural people as a new means for developing awareness and skills for developmental outcomes.

In addition to trust in the facilitator, there is a condition of trust in the content that is used for e-learning. There are several factors that influence rural people's trust in these e-learning contents. These include:

- Endorsement from a reputable and familiar expert in related areas
- Contextual relevancy
- Effectiveness, implying that they get expected results after following the contents
- Type of the content whether it is audio, video, text, image or animation

However, relevancy of some of these factors depends on whether rural people have direct access to the contents or not. For instance, in the Cycle-Women case rural people can watch the contents with the help of cycle-women, and all the factors mentioned above can be seen to contribute to their trust in the contents. However, in the Computer-Shop case rural people do not have direct access to the contents because facilitators or computer operators of the respective computer-shops orally share the agricultural knowledge they develop from the contents. Therefore, type of the content cannot influence rural people's development of trust directly. With reference to the above mentioned factors, rural women in the Cycle-Women case did not rely on the content about agriculture that cycle-women demonstrated. This was due to a lack of endorsement from their familiar and trusted agricultural experts. Some rural women also argue that some of the contents cycle-women used did not reflect on their realities and shared practices and as a result, learning was limited and thereby not effective (see section 6.2). Cycle-women, as well as their service users think that animated content as opposed to video of real-life performances lacks seriousness, and therefore, does little to convince them to trust in those for learning purposes (see section 6.8). The Computer-Shop case demonstrates that, although a few farmers initially trusted in the knowledge facilitators shared, but they did so because of the obligations out of their social relationships with the respective facilitators. They ultimately failed to trust in the

contents because the knowledge which was shared by those contents could not bring them expected results (see section 7.7). Therefore, rural people's trust in the content is vital if e-learning is to be established as a learning tool for developmental outcomes.

Trust in the implementing institutions (Tech-Net and Agro-Tech for the Cycle-Women and the Computer-Shop cases respectively) is another factor that influences rural people's adoption of e-learning. Rural people in both the Cycle-Women and Computer-Shop cases argue that instead of NGO led project based short-term initiatives they rely more on the GoB led initiatives which usually have longer duration. They associate NGO involvements with short-term initiatives be it around e-learning based initiatives or others. They believe that government never leaves them behind which NGOs do. As a result, short-term NGO-led initiatives raise concerns among rural people with regard to sustainability. Rural people and local level implementers in both the Cycle-Women and Computer-Shop cases claim that government initiatives are more sustainable and that government can be trusted to be on their side at all times. Development expert Bhattacharya [KC18] also argues:

> "In case of working on innovations NGOs might sometimes show the path; but it is government which then picks it up and implements it generously and sustainably, and at a considerably larger scale."

The trust of most of the stakeholders of e-learning initiatives therefore links to the government as the implementer of those initiatives. Trust in government to establish an e-learning system for rural people can be considered as an example of procedural trust because rural people have confidence in the altruistic and non-profit implementation approach of the government (Sztompka 2000). Application of Misztal's (1996) sociological framework of trust to this situation offers a different perspective in this trust relationship. According to Misztal's conceptualisation of trust, this trust in government can be argued to have policy implications. Misztal's framework also leads to an understanding that this trust relationship can also be considered as a habitus on account of the stability aspect because rural people consider this trust relationship as taken-for-granted. However, rural people's trust in government is not an absolute trust because they also have allegations of corruption against local-level government administration. Nonetheless, it can be argued that trust in the implementer of e-learning initiatives has influence over the adoption of e-learning.

In the case of a self-directed e-learning approach, where the learner does not need assistance from others for learning purposes, and in this context the development of trust centres mostly around the characteristics of the content. Drawing from the three cases with regard to self-directed e-learning, there is evidence that educated and ICT skilled learners usually use high-tech options (such as computers and Internet) while others prefer to use low-tech options. With reference to the Cycle-Women and Computer-Shop cases, rural people who do not have ICT skills and usually pursue e-learning with the help of low-tech options, such as television, want to see the presence of their trusted experts in the content of the television programmes. This leads to trust in the source of knowledge or information, which Heeks (2005) also identifies as an important element in any ICT4D initiative. However, this notion of trust in particular television programmes has developed over a prolonged time period and is based on realised gain, although referrals (which Sztompka (2000) categorises as secondary trust) through social relationships also support development of this kind of trust (Granovetter 1983, 1985). For instance, rural people have been following Meraz's [KC2] television programmes as effective means for learning agricultural skills since the early 1980s'. Some of them, even though are not involved in agriculture, trust in his expertise because he has been trusted by their acquaintances. This should not be confused with the concept of virtual personal trust, which is developed by means of frequent appearances on media platforms such as television or radio (Sztompka 2000). Rural people trust Meraz [KC2] not because of his consistent television appearances but rather because they have either been benefiting from his programmes, or they have heard about his expertise from their trusted sources.

All three cases demonstrate that while pursuing self-directed e-learning using computer and Internet, educated ICT skilled learners also rely on the affiliation of trusted experts with respective content. However, if they have the competencies to verify the merit of the content by searching related information on the Internet, then endorsement from trusted experts are not always sought by them. For example, Fatema [BC30] in the Cycle-Women case (see section 6.6) and Milad [PO12] in the Computer-Shop case (see section 7.5) demonstrate this approach in their e-learning practices. In the Internet-Freelancing case, learners pursue e-learning using Raisul's [PO17] content mostly because of the realised gain or success they achieve after following his contents. Therefore, effectiveness of the contents influences adoption of e-learning. Although high initial trust among individuals who are connected online is claimed by some

scholars (Iacono & Weisband 1997; Jarvenpaa & Leidner 1999; McKnight *et al.* 1998), my data is inconclusive with regard to the high initial trust between Raisul [PO17] and the learners who follow his content. My research shows that it is mostly the characteristics of the content which influence development of trust in the contents when self-directed e-learning through computer and Internet is concerned.

Therefore, it appears that trust brings confidence in the potential of e-learning, which then motivates rural people to adopt it. Notions of trust can therefore turn e-learning (which can be considered as a resource[281]) into a reliable method for learning or developing awareness and skills. Reflecting on Sen's (1985, 1992) capability approach framework, trust can then be considered as an implicit but essential conversion factor which fosters achievement of particular functioning or being which rural people value (Goerne 2010; Robeyns 2005). Therefore, with regard to e-learning trust has considerable influence over adoption of e-learning by rural people for developmental outcomes.

9.2.3. Local community as a supporting platform

Analyses of my data indicate that in the collectivist rural reality, local community can work as a supporting platform for ordinary rural people in order to enable them adopt e-learning given that they lack the abilities to afford the resources required for high-tech ICT based e-learning. I discuss about this below drawing on my analyses of data from my three cases.

The Cycle-Women and the Computer-Shop cases indicate that rural people other than the cycle-women and computer-shop operators are not keen to learn ICT skills in order to engage with computer and Internet based e-learning on their own (see sections 6.2, 7.7 and 7.9). Although they value e-learning as a means of learning despite their limited understanding of it, but they usually associate computer and the Internet with the technologies they think relevant for educated urban people. They do not consider themselves as educated even though they have completed five years of primary education which is traditionally considered as basic education in rural Bangladesh (Raynor 2007). Nonetheless, they are not keen to learn ICT skills to directly benefit from e-learning through the high-tech ICT options such as computer and the Internet. While one reason behind such approach is that they cannot afford purchasing the

[281] I discuss about the distinction between a resource and a conversion factor in section 9.3.

required resources such as a computer and Internet modem, they argue that even if these devices are given to them for free they are not motivated to learn ICT skills due to the costs involved which include time, energy and money which they are more interested to utilise in order to meet their everyday necessities. This lack of motivation is understandable because they need to spend most of their time, energy and efforts in providing for their families, managing household tasks and overcoming the challenges of their everyday lives. Kleine (2010) also identifies similar patterns in the rural Chile while studying a telecentre. Acknowledging these challenging realities that rural people face, Mansell (1998) argues that ICT4D interventions should be sensitive to these realities before striving to engage them. Momsen (2004) also criticises that some development initiatives pursue an insensitive assumption that those in the situations of poverty in the global South have idle time to get engaged into their initiatives. This rejection of the idea of learning particular ICT skills by rural people might appear as a barrier to conceive e-learning as a means of their wellbeing. However, the underlying motivation being considered this rejection can rather be considered as an illustration of freedom of pursuing what they value and thereby carrying notions of functioning in pursuit of their wellbeing, the way Sen (1985, 1993, 1999) conceptualises wellbeing with regard to freedom. This is because in their challenging lived reality rural people value not to invest their time, effort and money in learning ICT skills and functioning in pursuit of what they value is central to their wellbeing achievement as what Sen's (1993) concept of wellbeing refers to.

Despite the lived realities being less supportive of adopting high-tech ICT based e-learning in a self-directed manner, rural people in both the Cycle-Women and the Computer-Shop cases are keen to know more about e-learning and to adopt hi-tech ICT based e-learning with the help of their respective community. They want to rely on local community in this regard on two main issues: facilitator supported shared access and trusted explanations of the e-learning contents in local language to make sense of those in order to foster learning. The Cycle-Women and the Computer-Shop cases address these issues in a partial manner by providing explanations of the e-learning contents in local language and shared access with the help of local facilitators. In both the cases, facilitator supported e-learning is offered in a gender specific manner and only to the members of the groups who are registered by the underlying projects. However, respective rural people want to have shared access to computer and Internet at local high-schools where all of them feel comfortable to visit irrespective of their gender,

literacy, economic condition and social identity. They think that as GoB has given free computers/laptops to all high-schools, they should be able to access those for free. Demanding to rely on shared resources does not only save them from extra cost burdens, it also reduces the risks of losing their hard earned income which they usually spend on meeting their bare necessities. They argue that they want their local high-schools as e-learning centres where they can get support from their trusted ICT skilled teachers. [282]

While rural people want the local high-schools in their community as the e-learning access points due to the image of it being a place where anyone can visit, they want ICT skilled local high-school teachers to be their facilitator for several reasons. The reasons they put forward are:

- Teachers at local high-school are all member of the respective local community which makes them more acceptable to them. They argue that teachers at colleges might be more learned but majority of them are non-local which motivates them to prefer the high-school teachers as their facilitators.
- GoB has trained teachers from all high-schools in the country on ICT particularly on operating computer and Internet.
- Teachers are the most trusted members of the community who local people rely on for their moral influence, knowledge and expertise, when they face any problem or need to make sense of anything they are not familiar with.
- Teachers can not only support with shared access to computer and Internet but also can help with trusted explanations of the e-learning contents as well as enriching their understanding of e-learning and its potentials for wellbeing.

Therefore, despite their limited understanding of e-learning and limited abilities to adopt e-learning on their own, rural people seem to have found a probable way to develop understanding of e-learning and to adopt it overcoming the barriers they face in doing so. However, this distinctive local support is not yet incorporated in any ICT4D initiative and thereby left to be evaluated by future research initiatives.

[282] In spite of the government supported existing telecentre like infrastructure (UISC), they prefer local high-schools as the access point where they might access their preferred shared resources. As the rationale behind this preference they argue that – i) local high-schools are close to where they live whereas they need to spend considerable amount of money to visit the nearest UISC, ii) services provided by the UISC are clerical instead of developmental, iii) local women feel comfortable in accessing local high-schools but they do not want to access the UISC where they think mostly men visit for official purposes, and iv) administration of the UISC is influenced by local level political affiliations which discourages rural people.

Although local community can be argued to be a supporting platform in order to enable rural people adopt e-learning for their wellbeing, but it also depends on a few other underlying issues which all the three cases evidence. The issues include conditions of the local ICT infrastructure and local market for ICT product and services in rural Bangladesh. With regard to local ICT infrastructure, the cases show that in rural areas Internet speed is comparatively slower than it is in urban areas. This aspect of local ICT infrastructure can be argued to have influences over development of ICT oriented products and services in rural areas. ICT infrastructure, which is globally considered as a strategic national infrastructure, thus has a critical role to play (Mansell & Wehn 1998). All the cases evidence that rural people find Internet services expensive for them and the Internet-Freelancing case particularly indicates a difference in terms of availability of opportunities for commercial Internet services between rural and urban areas in Bangladesh (see sections 6.4 and 8.4). It also shows that the prospect for technopreneurship in rural areas is low due to low demand for related services. As a result, there exists a lack of consistent technical support services as part of formal economy in rural areas which can be argued to have substantial influence over rural people's adoption of high-tech ICT be it for e-learning or other purposes. These issues being addressed; local community can be argued to have the potentials to play supporting roles in enabling rural people living in situations of poverty adopt e-learning.

Local community with regard to providing shared access and trusted local facilitator can be argued to have the potentials to convert e-learning as a means of wellbeing for rural people. Thus, shared access and trusted local facilitator can be considered as conversion factors when Sen's (1985, 1992) capability approach framework is adopted (Robeyns 2005). Local community thus holds these conversion factors being a supporting platform for rural people in enabling them adopting high-tech ICT based e-learning as a means of their wellbeing achievement.

9.2.4. Type of the content influences understanding

Type which refers to the observable characteristics of the contents has influence over rural people's understanding of those contents, even if rural people's access to e-learning is supported by facilitators. The characteristics I refer to include visual aspects, such as text, image and video (animated or real-life), and auditory aspects, such as use of language. I discuss below how the type of the content can influence rural people making sense of the e-learning contents reflecting on findings from the three cases.

Among text, image, audio and video (animated or real-life) types of contents, rural people in all three cases prefer video contents with dual sensory appeal (visual and audio) which demonstrate real-life instances instead of animated simulations (see sections 6.8, 7.7 and 8.6). [283] This preference holds true for all the learners irrespective of their levels of education and command over ICT skills. They claim that the video clip type content substantially influences their motivation to learn and they find it to be the most effective content type which enhances their understanding. They argue that video clips can help them learn better as their dual sensory appeal leads to effective and faster learning. This particular type of content facilitates developing skills through learning, in a way which might be compared with the way Sennett argues skill is built, with the help of 'extended rhythm to the hand and the eye' (Sennett 2008, p175). Real-life instances through video clips, instead of animated simulations of reality, give them a sense of confidence in the content, along with an air of authenticity, and minimise the need for imaginative power, which is essential to understand the underlying implications of the content. Other types such as text and image cannot always provide these benefits to the learners. Lebel (2013) and Wisner (2010) specifically claim that text might not suffice to document the issues embedded into rural farmers' complex realities. Sennett (2008) also endorses the limitations of written form in detailing physical actions or technical processes. However, both Tech-Net and Agro-Tech, in the Cycle-Women and the Computer-Shop cases respectively, do not seem to be concerned about the significance of type of the content. While Tech-Net uses only a few video clips demonstrating real-life instances, Agro-Tech does not use any video clip type content. This mismatch in using the appropriate type of the content influences the level of participation by rural people in the respective e-learning initiatives (see section 6.8 and 7.5). For instance, in the Cycle-Women case rural people find it difficult to learn even from the animated contents which they find rather entertaining than effective for learning purposes. In order to learn effectively they want video clip type contents that use real-life demonstrations. The use of video clips therefore has a marked impact on rural people's understanding of the e-learning contents.

The language used in the content also has considerable influence over a learner's understanding of the subject matter of the content. A learner's level of education can influence on his/her understanding of the language used in the content. With reference

[283] They argue that animation makes them feel like they are watching cartoon, which undermines their learning experience and demotivates them to learn. They associate animated contents with entertainment instead of learning anything, which might have values for their lives and livelihoods.

to the Cycle-Women and Computer-Shop cases, most of the rural people only completed five years of primary education but they are not comfortable using standard Bengali language; they tend to use local language in all of their everyday interactions. As a result, they prefer use of local language in the content for their enhanced understanding as they cannot make sense of standard Bengali language fully. They also think that standard Bengali is the language of urban educated people, not of the rural people. However, to confront this challenge around language and understanding of the contents, they prefer the help of ICT skilled local high-school teachers as their knowledgeable local trust anchor. Neither Tech4Women nor Tech4Agro reflects on this particular preference around use of local language in the content. In the Internet-Freelancing case, Raisul [PO17] and his trainees do not have any strong stance for use of local language in the content. They are about equally comfortable in learning from content that uses standard Bengali and English. This can be attributed to the fact that all of them have completed at least ten years of education and are comfortable in using computer, which usually uses the English language for most of its operating procedures. Therefore, language used in the content can also have considerable influence over rural people's understanding.

The type of the content used in e-learning can be considered as a conversion factor when Sen's (1992) capability approach framework is applied; because it converts or helps to convert the underlying abstract knowledge of the content into active cognisance, making e-learning an option for learning and developing awareness, skills and knowledge. Type of the content influences understanding its underlying concept or knowledge in terms of the imaginative power it requires the learner to have. In this regard, video type content which uses real-life demonstration with dual sensory appeals are preferred by rural people the most because of its enhanced effectiveness compared to those of the other types of contents in communicating details on any process or techniques. Type of the content therefore plays an important role in enhancing rural people's opportunity to choose e-learning as an option to pursue learning and developing awareness, skills and knowledge that they value pursuing. Type of the content thus can convert e-learning contents into a means of learning for rural people. Adopting Sen's (1985, 1992) capability approach framework, type of content thus can be considered as a conversion factor in rural people's capability development with regard to adopting e-learning as a means for learning. Therefore, in the case of e-learning, video clip type content demonstrating real-life examples have a greater

potential in supporting rural people making sense of e-learning contents than the other types of contents have.

9.2.5. Roles of funding

Funding supports, in varying patterns, have been playing a vital role in the development sector of Bangladesh (Lewis 1998). My research identifies that consistent funding supports are also important for the ICT4D sector in Bangladesh which can support achievement of the new sustainable development goals manifestations, which consider learning as a means for development (UN 2015). In the following paragraphs I discuss how the context of my research magnifies the necessities of funding supports for e-learning initiatives for effective outcomes, reflecting on the Cycle-Women and Computer-Shop cases. Further to this, I assess how particular patterns of funding supports have an impact on the sustainability aspects of respective initiatives.

Both the Cycle-Women and the Computer-Shop cases show that without consistent funding respective initiatives around e-learning are not sustainable (see sections 6.3 and 7.2). While the particular top-down operating principles of these projects can be held responsible for their low effectiveness, existing contextual realities around ICT in rural Bangladesh are also not yet ready to support sustainable e-learning initiatives (or ICT4D initiatives in general) without funding supports. As can be seen in the Cycle-Women case, one such contextual reality is that those living in situations of poverty are not keen to pay for e-learning services, or are not in a position to pay for these services (see sections 6.2 and 6.3). This is because in the challenging rural realities they already struggle incessantly even to meet their bare necessities. As a result, spending money for e-learning is not a priority for them and it indicates that supporting e-learning initiatives through income generating approach is a less viable option. It also shows the low prospects for technopreneurship in its current forms in the rural areas. In the rural agrarian economy, technopreneurship is still not embedded within the local formal economy and suffers from low demand for related paid services and as a result technopreneurs cannot earn enough to survive. Therefore, as rural people are not keen to pay for e-learning services and that the prospect for technopreneurship in its current forms is low, funding supports are essential if initiatives around e-learning are to be sustainable.

While funding supports are crucial for sustaining the initiatives around e-learning, sometimes particular patterns of funding also affect the sustainability aspects of the respective initiatives. With reference to the Computer-Shop case, funding supports from even multiple commercial enterprises (Phone-Com and Agro-BD) in addition to international funding could not ensure sustainability of Tech4Agro.[284] In this regard, particular pattern of funding and motives behind the funding can be argued to have played roles in affecting the sustainability aspects of respective initiative. Tech4Agro suffered from the consequences of scattered funding when funding from Market-Aid stopped and it had to stop facilitator supports. Although commercial funding did not stop but involvements of commercial enterprises in funding Tech4Agro are grounded in profit relationships with commercial motivations among Agro-Tech, Phone-Com and Agro-BD. Tech4Agro provides recognition of Agro-Tech to the global development sector as ICT4D implementer, increases Internet use provided by Phone-Com and provides customer feedback on the products Agro-BD produces. However, the ground level local implementers (computer-shop owners) gain nothing in return for their active participation in implementing the project by offering services in terms of searching relevant agricultural knowledge from the knowledge repository and paying Phone-Com for the Internet volume they use to offer their services for Tech4Agro (see section 7.2).These particular funding relationships, coupled with poor supports and monitoring, could not ensure sustainability of the project in spite of having a ready and running platform of the computer-shops. Therefore, the motives behind the funding support and the pattern of funding are vital factors in ensuring sustainability of e-learning initiatives.

Funding support when that is consistent and its underlying motives are inclined towards development, rather than commercial gains, can be argued to be a necessary condition in order to ensure sustainability of the initiatives around e-learning in rural Bangladesh. However, funding alone is not sufficient to ensure sustainability as that depends on many other factors one of which is whether the initiative is implemented in a top-down or a bottom-up approach. In the given socioeconomic reality in rural Bangladesh, implementing e-learning initiatives to bring forth a new means for learning for ordinary rural people appears as a difficult task without any underlying funding support. Funding supports can be argued to convert e-learning opportunities into a means of wellbeing for rural people by tapping those opportunities into specific dedicated initiatives. Thus, as

[284] Both Phone-Com and Agro-BD have inadequate experience of working in the development sector in Bangladesh.

per Sen's (1985, 1992) capability approach framework, funding can be considered as a conversion factor which can facilitate bringing in more options, thereby more freedom, for rural people to pursue learning in order to achieve their wellbeing through e-learning (Robeyns 2005).

9.2.6. Crowdsourcing for effective e-learning

E-learning can facilitate providing expert supports through crowdsourcing particularly when expert support is difficult to manage for institutions to offer learning opportunities to respective learners. However, expert crowds need to be motivated to develop a gift relationship (Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966) with the learners in order to provide them with their voluntary expert supports. The Internet-Freelancing case evidences this aspect of e-learning where expert web programmers offer this crowdsourcing support which enhances effectiveness of the learning experience of the web programming enthusiasts while participating in Raisul's [PO17] e-learning initiative as learners. I discuss below about this particular aspect of crowdsourcing with regard to its roles in e-learning.

In the Internet-Freelancing case, Raisul [PO17] included the provision within his e-learning platform to integrate crowdsourcing supports from expert web programmers. This crowdsourcing option not only helps him with managing his e-learning initiative effectively with expert supports for the learners but also offers the learners a comprehensive and accomplished learning experience supported by on-demand expert supports. Although Raisul [PO17] produces e-learning contents by himself but crowdsourcing helps him with addressing learners' queries in an effective and prompt manner which Raisul [PO17] as well as his trainees consider vital for making the learning experience through e-learning effective. Raisul [PO17] claims that institutional provisions for learning web programming cannot engage expert web programmers to train the web programming enthusiasts because the experts are too expensive to afford and that they are not keen to get engaged in formal institutional initiatives. However, Raisul [PO17] claims that his e-learning initiative benefits from the crowdsourcing based collective intelligence (Bandura 2000) only because expert web programmers are encouraged by his altruistic philanthropic initiative and are motivated to contribute to his initiative by offering their expert suggestions in addressing learners' relevant queries. Raisul's [PO17] and expert crowds' altruistic philanthropic contributions to e-learning can be considered as grounded in the gift culture led gift relationship (Baym 2011;

Bergquist & Ljungberg 2001; Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966). Although Mauss (1966) emphasises on reciprocity in a gift relationship but in this case the gift relationship among web programming enthusiasts and expert crowds that is among the virtual communities on the Internet is driven by altruism[285]. This particular gift culture in the Internet-Freelancing case excludes profit motives as the underlying values and thereby is not linked with what Hellekson (2009) argues as community of commerce.

Although crowdsourcing has mostly been used as a successful business model by institutions in developed countries, but it has got potentials to address health, social and environmental issues through its non-profit applications (Brabham 2008). This indicates prospects for crowdsourcing as a means of content creation and sharing of these contents on Internet (Baym 2011; Edwards 2014) which can eventually influence effectiveness of e-learning in a broader perspective. It also indicates prospects for crowd supported e-learning in addressing rural people's wellbeing given that Sen (1992, 2006) prioritises issues around health in order to ensure rural people's wellbeing, and Brabham's (2008) above claim relates this matter to crowdsourcing. Scholars (Brabham 2008; Van Dijck 2009; Jenkins, H. 2006) believe that Internet based web technology can facilitate utilisation of this crowdsourcing based collective intelligence by sharing contents. However, Terranova (2000) argues that to make this happen respective crowds need to believe in shared values. In addition to that, sociocultural relevancy of the crowd provided free-contents also influence the effectiveness of respective e-learning opportunity (Chin 2014). As a result, quality of the contents and content related accountability remain a matter of concern (Van Dijck 2009). One reality which can limit prospects for crowd supported e-learning is that only a small[286] percentage of ICT skilled people usually work as content providing crowd (Van Dijck 2009). However, if respective experts contribute to the creation of free contents like the way the Internet-Freelancing case demonstrates then the altruistic contribution of the collective intelligence of the expert crowd (Barbrook 1998; Lévy 1997 [1995]; Surowiecki 2004) can be utilised to enhance the effectiveness of learners' e-learning experience.

[285] The motivating factors which shape gift relationship include altruism, reciprocity, online status seeking, experience sharing, building online identity and team spirit in groups based on the extent of contributions to free-content creation or information sharing (Lampel & Bhalla 2007).
[286] Even in the developed economy such as the USA, only 13% of the total online users act as the content creators (Van Dijck 2009).

When seen through Sen's (1985, 1992) capability approach framework, crowdsourcing from expert crowd can be considered as a conversion factor (Robeyns 2005) which can convert e-learning into an effective means of expert supported learning experience. Crowdsourcing can be argued to enhance capability of the learners who adopt e-learning because it offers them with more options to pursue learning beyond the institutional provisions for learning. With the advancement of ICT, the gift culture is argued to remain embedded in a symbiotic relationship mostly by means of altruism where experts share their knowledge and skills with others for free of charge through content sharing on Internet (Barbrook 1998). This indicates prospects for crowdsourcing in enhancing effectiveness of e-learning even in the coming days.

9.3. Discussion of the first supplementary research question

My first supplementary research question: **how are the development of capabilities and e-learning connected?**

The main factor that correlates e-learning with capability development is the freedom of learning that e-learning can offer to those living in situations of poverty in rural Bangladesh. E-learning offers rural people a new means to learn and develop awareness, skills and knowledge, in order to achieve the desired states of being or doing they value. It offers these learning opportunities through multiple means, such as computer, the Internet, television, radio and mobile phones. Use of these multiple means is one aspect of how e-learning offers enhanced learning opportunities.

E-learning offers flexibility because people can choose their suitable e-learning option, depending upon their levels of literacy, affordability, access to particular ICT devices, and possession of the required skills to operate respective ICT devices. Internet based e-learning, in particular, also offers time independent learning opportunities, which is useful for the time poor rural people, who live a labour-intensive lifestyle. This is because usually their lived realities offer them limited provisions to pursue learning through institutional arrangements. This flexibility offered by e-learning can be argued to enhance learners' capability, because it offers multiple options which corresponds to a sense of freedom, which enables rural people to pursue the means of e-learning they have reasons to value. For instance, both the Cycle-Women and the Computer-Shop cases show that although television programmes are time bound; rural people value and prefer television oriented e-learning to pursue agricultural learning (see sections 6.6 and

7.7). This illustrates an instance of the development of capability or enhanced freedom for them to learn, because they have no other convenient and consistent means to learn new agricultural skills, except through informal social interactions with their local expert farmers and neighbours which illustrate social learning opportunities (Bandura 1977; Lave & Wenger 1991; Wenger 2009). The computer and Internet based e-learning options of these two cases could only engage rural people marginally. This is because although, in principle, respective rural people are keen to pursue e-learning through computer and Internet, the ways e-learning has been conceptualised and designed do not motivate them to adopt the respective models of e-learning.

Despite being flexible, rural people's adoption of e-learning depends on different factors that can convert e-learning into a means of their learning and development of awareness, skills and knowledge, which can in turn influence their wellbeing. These factors can be considered as what Gewirtz (1972) conceives as contextual determinants or conditions in social learning. My research shows that rural people pursue e-learning when they find the underlying approaches to it as contextually significant (see section 6.2). For instance, in the Cycle-Women case, local women facilitators support respective rural women with shared access to e-learning. This helps to encounter the persisting patriarchy and conservative sociocultural norms and at the same time to enhance their competencies to reach out to their zone of proximal development (Vygotsky 1978). This support is useful because the majority of the rural women have neither access to ICT, nor the required ICT skills to be able to pursue self-directed e-learning. However, in most cases, they are disinclined to internalise the knowledge cycle-women share through the e-learning content. One of the reasons for this is: some of the contents cycle-women share do not correlate with rural women's lived realities and common rural practices. Another reason is the use of animated content instead of content with real-life demonstrations, which rural people prefer. Lack of trust in the cycle-women, to be considered as their knowledgeable experts, is the other reason that discourages rural women from adopting e-learning. As a result, the e-learning model in the Cycle-Women case can be argued to remain only marginally effective.

In the Computer-Shop case, rural farmers are also offered support from the facilitators to pursue e-learning in an attempt to facilitate reaching out to their respective zone of proximal development (Vygotsky 1978). However, the e-learning model of this case does not motivate respective rural farmers to adopt e-learning in an expected way. One

of the main reasons for this is that, rural people do not consider the respective facilitators to be their trusted experts who they can rely on (see sections 7.7 and 7.9). As both men and women take part in agriculture, it is also imperative that the facilitators are equally accepted by both male and female farmers, in order to offer effective support. This case does not demonstrate this overall acceptance of the respective facilitators. Trust in the facilitator influences how rural people value e-learning and to what extent they will adopt e-learning. This is well-illustrated by the Cycle-Women case as well (see section 6.6). As a result, offering new and increased means of learning through e-learning does not always contribute to rural people's effective capability enhancement. Therefore, being able to reach out to be in the zone of proximal development (Vygotsky 1978) does not always come with capability enhancement. This is because respective rural people also need to value pursuing the new and/or increased means of learning through e-learning, if those enhanced means are to be considered as their capability enhancement (Sen 1985). Here, capabilities, as per Sen's (1985, 1999) conceptualisation, are linked with accessing different learning opportunities and substantial freedom to choose a means of learning that rural people value.

In the Internet-Freelancing case, e-learning offers the web programming enthusiasts a convenient means of learning and developing related knowledge and skills, which they cannot do through other means. It enables both men and women web programming enthusiasts, who have ICT skills and access to computers and the Internet, to become Internet freelancers and eventually gain economic empowerment. It helps learners overcome some of the barriers such as patriarchy, labour intensive lifestyle, lack of solvency or poor economic status and limited institutional provisions for learning, which have been impeding their related learning initiatives (see section 8.3). E-learning thus can minimise barriers in the way of learning, and by doing so facilitates freedom of learning by offering new means of learning opportunities, and thereby enhances learners' capabilities.

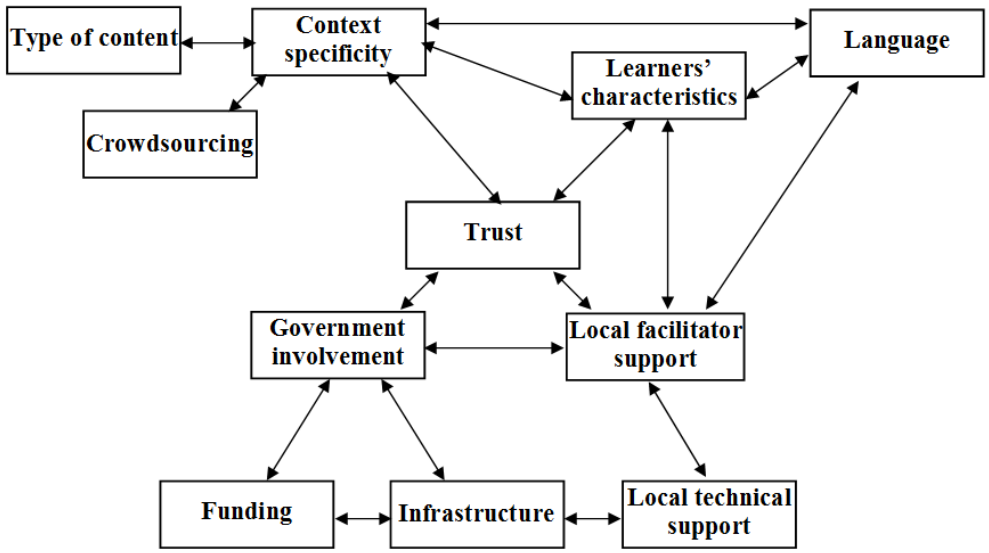
The different factors that convert e-learning into a means of learning for rural people to develop awareness, skills and knowledge, influencing their wellbeing achievements, can be compared to what Sen (1985, 1992) identifies as conversion factors in his capability approach framework (Goerne 2010; Robeyns 2005). According to the three cases, the factors that convert e-learning into a contextually meaningful means to pursue learning are illustrated in the following table (Table 9.1).

Table 9.1: E-learning conversion factors for wellbeing in rural Bangladesh

E-learning conversion factor	Detail
Context specificity	Context specific and relevant e-learning content
Trust	Content endorsed by the experts who rural people trust in
Type of content	Video clip type content with real-life demonstrations
Local facilitator support	Support from trusted local facilitators who can provide explanations of the content in local language, facilitate accessing e-learning through shared devices and who are equally accepted by both men and women
Local technical support	Availability of consistent local assistance on technical support around ICT such as fixing the devices beyond the remit of any ICT4D project
Government involvement	Involvement of government as the trusted implementer when institutional initiatives are organised to establish e-learning system
Language	Language of the content
Learners' characteristics	Language proficiency, education, literacy level, ICT skills and understanding of e-learning (the former four factors are significant mostly for self-directed e-learning)
Infrastructure	Appropriate ICT infrastructure
Funding	Consistent funding support
Crowdsourcing	Crowdsourcing from expert crowd when crowdsourcing support is integrated in providing e-learning opportunities

These conversion factors, which I name e-learning conversion factors, are necessary if e-learning is to act as a means of rural people's wellbeing achievement. However, none of these e-learning conversion factors alone is sufficient to convert e-learning into a means of wellbeing. Rather, all these e-learning conversion factors need to be configured with respect to the particular context. Basis of this argument can also be found in the way Lave and Wenger (1991) claim context and cultural reality have influences over social learning. The following diagram (Figure 9.1) shows the configuration in terms of relationships among these factors with regard to rural Bangladesh.

Figure 9.1: Relationships among e-learning conversion factors in rural Bangladesh



The relationships demonstrated in the above diagram indicate a particular configuration in terms of interrelationships among the e-learning conversion factors. For instance, context specificity of the e-learning content alone is not sufficient, because content also needs to be of a particular type, incorporate suitable language, and correlate trust in the content. Learner's characteristics, such as understanding of e-learning, also influence context specific appeal of the content. Crowdsourcing is also related to this factor, in terms of its influence over the supply of content and in supporting intelligibility of the content. In this particular configuration, the learner's characteristics also influence trust in the content and intelligibility of the content, by means of her/his proficiency in the language used. However, support from a trusted local facilitator can complement the learner's characteristics, enabling her/him to make sense of e-learning and adopt it as a means of wellbeing achievement. It does it by offering the learner with explanations of the content, in a locally understandable language. Nonetheless, the local facilitator support depends on the availability of consistent technical support in the locality, in the areas of fixing the ICT devices and troubleshooting other technical problems, which a local facilitator cannot resolve. Availability of this technical support, as part of the formal local economy, is linked to existing ICT infrastructure. This is because ICT infrastructure shapes consistent provisions for ICT products and services at local level, which altogether is a necessary condition for consistent local technical support to exist. Government involvements and funding supports can help improve the local level ICT infrastructure. The government, as the trust anchor, also needs to get involved in developing the e-learning platform, and support trusted local facilitators with required

resources to help them foster shared access to e-learning for ordinary rural people. By the term resource I imply anything tangible or intangible that can offer future benefit when that is used. Resource thus focuses on expected benefits. It can be considered as an essential input and/or a enabling condition for the e-learning system. Conversion factor (e-learning conversion factor to be specific) on the other hand focuses on functionality with regard to converting one thing (might or might not be a resource) into other (might or might not be a resource) in order to facilitate execution of a desired outcome which in this case implicates adoption of e-learning. A resource can always be related to conversion or the functionality of conversion and thereby can be related to respective conversion factor(s). However, a conversion factor might not always be considered as a resource. For instance, type of content is always a conversion factor as it always influences adoption of e-learning but it might not always be considered as a resource as it might not bring any benefit if the learner does not prefer the type of content for e-learning purpose.

Therefore, e-learning, in principle, can help rural people develop and enhance capabilities. It can allow them to experience the freedom of learning and to develop awareness, skills and knowledge, which they value, in pursuit of their wellbeing achievements. However, it is imperative that while conceptualising e-learning as a means of achieving wellbeing for those living in situations of poverty in rural Bangladesh, the related factors mentioned above, as the e-learning conversion factors, are configured in a particular way (demonstrated by Figure 9.1) to conform to their lived realities.

9.4. Discussion of the second supplementary research question

My second supplementary research question: **how is the adoption of e-learning linked to resources and community support?**

Adoption of e-learning is profoundly shaped by possession of or access to the required resources and support from the respective local community in this regard. Resources work as the essential inputs and/or enabling conditions for adoption of e-learning. In the lived realities of those living in situations of poverty in rural Bangladesh, their inability to afford the majority of the required resources for e-learning makes the roles of the respective communities even more crucial. Cole (1985) and Wenger (2009) also identify the roles community plays as an essential element in social learning. For most cases, in

the collectivist society of rural Bangladesh, shared access to ICT and expert support from respective local community members are the lived reality. This is clear in both the Cycle-Women case and the Computer-Shop case. According to my case studies, the different kinds of resources that influence rural people's adoption of self-directed and/or facilitator supported e-learning are presented in the following table (Table 9.2).

Table 9.2: Resources required for e-learning as a means of wellbeing in Bangladesh

Focus	Resource	Detail	Relevant e-learning conversion factor
Technology	ICT devices	It includes both high-tech ICT options such as computer and Internet, and low-tech ICT options such as television, radio and mobile phone (see sections 6.2, 6.6, 6.8, 7.5, 7.7, and 8.2)	Infrastructure, local facilitator support, and local technical support
	Power supply	It includes grid power supply (see section 8.4)	Infrastructure
	Context specific content	It includes contents in the areas relevant for the lived realities of respective rural people and includes but are not limited to agriculture, health, right and entitlement (see sections 6.2 and 7.4)	Context specificity, language, type of content, trust, and crowdsourcing
	ICT infrastructure	It includes physical infrastructure around ICT, aspects of what are experienced by rural people mainly in terms of speed and coverage of Internet (see section 8.4).	Infrastructure
	Access to ICT	Direct or facilitator supported access to ICT, particularly the Internet (see sections 6.2, 7.9 and 8.4)	Infrastructure, learner's characteristics, local facilitator support, and local technical support
Person	ICT skills	Skills required to operate ICT devices (see sections 6.4, 6.6, 7.5, 8.2 and 8.3)	Learner's characteristics and infrastructure
	Literacy and education	Literacy and formal education that can help make sense of e-learning content (see sections 6.2, 6.6, 7.5 and 8.2)	Learner's characteristics
Community	ICT skilled trusted local experts	ICT skilled trusted local experts as the facilitators who can support with shared access to ICT and explanations of the contents in local language (see sections 6.6, 7.7 and 7.9)	Local facilitator support, trust, language and local technical support
	Consistent local technical	Consistent technical supports at local level particularly to fix	Local technical support and

(continued)

Community	supports	devices and troubleshoot other technical problems (see section 6.9)	infrastructure
	Crowdsourcing	Crowdsourcing or the gift culture of the expert crowd to provide knowledge support in terms of content creation and/or sharing relevant knowledge and skills (see section 8.5)	Crowdsourcing
Person and community	Trust	Trust in the content, the facilitators and the respective implementer of the e-learning initiative (see sections 6.6 and 7.7)	Learner's characteristics, trust, language, context specificity, local facilitator support, and government involvement

As shown in Table 9.2, the relevant resources required to conceptualise e-learning as a means of wellbeing in rural Bangladesh involve focuses on four broad areas, where three are distinctive and one is a compound focus. These focuses are technology, person, community and a compound focus of person and community together. These resources can also be onsidered as what Gewirtz (1972) perceives as contextual determinants or qualifiers or conditions, in the context of social learning. While these resources are different, they remain interlinked in terms of the respective e-learning conversion factors each of the resources is related to. The interrelationships between the resources and the e-learning conversion factors are coherent with the particular configuration of the e-learning conversion factors, as presented in Figure 9.1 above. These resources are necessary and rural people need these resources in a distinctive way to materialise e-learning as a means of wellbeing achievement. Despite being necessary, none of these resources alone is sufficient; they need to remain configured in a particular way, as outlined by the Table 9.2 above.

The resources that focus on the technology aspect include ICT infrastructure, ICT devices, power supply, access to ICT, and context specific content. These resources are interconnected with one another, as they are with the resources belonging to the other broad areas, as per the outline in the Table 9.2 above. These interconnections are visible mostly in terms of the involvements of shared e-learning conversion factors. Infrastructure is the e-learning conversion factor that directly ties the majority of the resources in the areas of technology.

The resources that focus on the learner include ICT skills, literacy, and education - assuming that convenient access to respective ICT devices exists. Requirement of these resources, in order to adopt e-learning, are considerably influenced by the personal characteristics of the learner. The pivotal characteristic is about whether the learner can or cannot pursue self-directed e-learning. When access to e-learning is ensured, educated ICT skilled learners can generally pursue self-directed e-learning. However, the rural reality is that the majority of the ordinary rural people lack ICT skills, literacy, and the education required to adopt e-learning, particularly computer and Internet based e-learning. Furthermore, despite their interest in adopting e-learning, they are not keen to pursue achieving these resources for e-learning purposes, due to substantial opportunity costs they need to encounter. This opportunity costs imply that the amount of time, effort, and money they need to spend to get these resources, could be spent to ensure their everyday necessities. In the persisting collectivist rural reality, they rather want to rely on their local community to compensate for their lack of required resources (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995). As a result, shared access to the resources, required for e-learning, is pivotal for ordinary rural people to adopt e-learning in their lived reality.

The resources that focus on the community aspects include ICT skilled trusted local experts, consistent local technical support, and crowdsourcing. Among these resources, crowdsourcing is the most technical but least explored resource option in Bangladesh, though the Internet-Freelancing case evidences its success. The socioeconomic realities in rural Bangladesh indicate that existence of consistent local technical support depends on ICT infrastructure and related economic activities around it, such as a reasonable demand for ICT oriented product and services in rural areas. ICT skilled trusted local experts can support with facilitated access to e-learning, as well as explanations of the content, making those more intelligible for rural people. Along with these resources, shared access to e-learning, within the local community, is equally important when high-tech ICT based e-learning for ordinary rural people is concerned. Roles of ICT skilled trusted local experts are intimately connected to this requirement. In the Cycle-Women and Computer-Shop cases, respective rural people are offered shared access to computer and Internet based e-learning with the help of local facilitators at their doorsteps and at the computer shops in the nearby markets, respectively. However, for rural people the ideal would be a shared access to the computers located at local high-schools within their community, with the support of their trusted ICT skilled teachers.

They want these local teachers to help them with access to e-learning as well as with explanations of the content in locally understandable language. They consider these ICT skilled teachers as the best option for them to get trusted local expert support in ICT, in order to adopt e-learning, despite the existing facilitator support from the underlying projects of the cases. However, it requires further research to understand how to engage these local high-school teachers effectively to support rural people in the adoption of e-learning. This community supported shared access might also resolve the struggle, most of the ICT4D initiatives face with regard to managing required resources (Avergoue 2008).

In addition to the support from local communities, knowledge communities also have roles to play, because rural people want to know their views on the potentials of ICT with regard to e-learning, before adopting it as a learning tool and a means of their wellbeing achievement. Both the local communities and the knowledge communities thus can help rural people in reaching out to their zone of proximal development with regard to developing their competencies (Vygotsky 1978). Although Press (1996) argues that ICT has the potential to enhance awareness, rural people want to develop awareness about the potentials of ICT and e-learning in the first instance. The persisting lack of awareness among ordinary rural people about e-learning and ICT can be correlated with the particular approach most of the ICT4D initiatives take, ignoring the need for developing local level technical capacities (Avergoue 2008). In this regard, the Internet-Freelancing case demonstrates that sometimes crowdsourcing can work as a source of expert knowledge, which might address this lack of local level technical capacities and can also help develop required local level capacities. However, to materialise this potential of crowdsourcing, it is imperative that the expert crowds are motivated to pursue the gift culture, out of altruism, in order to offer their expert knowledge support, and that they are connected to rural people either directly or through their trusted local experts (Baym 2011; Bergquist & Ljungberg 2001; Castells 1996; Giesler & Pohlmann 2003; Jones 2003; Mauss 1966).

The resource that overlaps with both the broad areas of person and community is trust, particularly rural people's trust in the content, the facilitators and the respective implementer of the e-learning initiatives. Issues around trust are incorporated in existing ICT4D literature with limited perspectives (Heeks 2005; Kleine 2007, 2013). For instance, Heeks (2005) emphasises the importance of trust, but relates trust mostly with

the sources of information and/or knowledge, that is the e-learning contents. Thus, my research informs two other crucially important aspects of trust, in addition to what Heeks (2005) advocates. However, trust in the facilitators who provide shared access to e-learning and explanations of the content into locally intelligible language is the pivotal one.

The socioeconomic and sociocultural realities facing those living in situations of poverty in rural Bangladesh indicate that although they need all the resources listed above (Table 9.2), they need to have access to the majority of these resources in a shared manner. However, the list of resources required to adopt e-learning might be considered dynamic in a sense that over a long period of time the contexts might change and demand a modified list of resources, requiring a regular monitoring and adjustments to the list. In reference to the existing rural reality, my research informs that, trust based community supported shared access to e-learning can be the way for ordinary rural people to pursue freedom of learning and developing awareness, skills and knowledge, which can foster their wellbeing achievement.

9.5. Discussion of the third supplementary research question

My third supplementary research question: **how is e-learning positioned in terms of social embeddedness?**

Social embeddedness is central to conceptualise e-learning as a means for rural people's wellbeing achievements for two main reasons: rural people in Bangladesh live in a collectivist sociocultural reality (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995) which further emphasises the roles society can play in social learning (Cole 1985), and learning itself is a social process (Greeno, Collins, & Resnick 1996). Rural people prioritise community, kinship, and family over an individual (Deci & Ryan 2008; Devine *et al*. 2008; Diener & Diener 1995; Diener *et al*. 1995). [287] This approach can be argued to shape the ways rural people sense their wellbeing because as per Sen's (1993, 1999) conceptualisation, wellbeing is shaped by people's desire to achieve a particular state of being and/or doing they value. Social embeddedness of e-learning can be considered as a necessity because of rural people's usual ways of learning. Generally rural people's learning gravitates around their lives

[287] This attitude is also reflected throughout the conversations of the rural people I interviewed. On many occasions, while expressing their own views they use 'we' instead of 'I', which shows their instinct for collectivist ways of thinking.

and livelihoods which they learn through informal social interactions, particularly by observation and by doing, that can be argued to illustrate social learning (Bandura 1977; Cole 1985; Wenger 2009). Their learning practices are embedded within their social relationships and the social realities they live in, which can be argued to be similar to the concept of communities of practice (Lave & Wenger 1991; Wenger 2009). As rural people expect e-learning to correspond to their usual ways of learning, it can be argued that social embeddedness demands to be an inherent aspect of e-learning, if rural people are to adopt it as part of their everyday realities around learning. Therefore, altogether, rural people's usual learning practices, the inherent nature of learning as being a social process, and the overall collectivist social realities, indicate the necessity of e-learning to be socially embedded in order to be considered as a means of wellbeing achievement.

My research informs that with respect to e-learning in rural Bangladesh, social embeddedness is shaped by respective context and comprises of several aspects which can also be considered as contextual conditionality (Gewirtz 1972). I present the different aspects of social embeddedness in the following table (Table 9.3).

Table 9.3: Aspects of social embeddedness around e-learning in rural Bangladesh

Social embeddedness aspect	Related resource	Related e-learning conversion factor
Trust relationships between the learner and the facilitator (see sections 6.6, 7.7 and 7.9)	Trust	Learner's characteristics, trust, language, context specificity, local facilitator support, and government involvement
Expert support from trusted local community members as the facilitators (see sections 6.6 and 7.9)	ICT skilled trusted local experts	Local facilitator support, trust, language and local technical support
Shared local access to computer and Internet for e-learning purposes (see sections 6.10 and 7.7)	ICT skilled trusted local experts, ICT devices, Power supply	Local facilitator support, trust, language, local technical support, and infrastructure
Consistent technical support around ICT (such as fixing devices) at local level but beyond the remit of any project based initiative (see section 6.9)	Consistent local technical supports, ICT infrastructure	Local technical support and infrastructure
Informal learning atmosphere (see sections 6.5, 6.10, 7.5)	ICT devices, power supply, ICT skilled trusted local experts	Infrastructure, local facilitator support, local technical support, trust and language
Context specific content and means of e-learning (see sections 6.2, 7.4 and 7.5)	Literacy, education, context specific contents, ICT skills, ICT devices, power supply	Context specificity, language, type of content, trust, crowdsourcing, learner's characteristics, infrastructure, local facilitator support, and local technical support
Learners' effective participation in e-learning (see sections 6.10 and 7.4)	Access to ICT, context specific content, trust, ICT	Context specificity, infrastructure, language, type of content, trust, crowdsourcing, learner's

(continued)

	skilled trusted local experts	characteristics, local facilitator support, government involvement, and local technical support

These aspects of social embeddedness, listed above (Table 9.3), are directly connected to all the required resources, except crowdsourcing, that rural people need to adopt e-learning as a means of wellbeing achievement (Table 9.2). This is due to crowdsourcing being the least integrated resource, among all the resources (Table 9.2) required for e-learning in the context of Bangladesh. However, the Internet-Freelancing case evidences relevancy of crowdsourcing in establishing an effective e-learning system. Nonetheless, crowdsourcing is indirectly connected to the other resources through the corresponding e-learning conversion factor - context specific content. While all these aspects listed above (Table 9.3) are essential, no single aspect alone is sufficient, rather they all need to coexist. It is also important to note that these aspects become functional when the particular configuration of e-learning conversion factors and the specific arrangements of the resources are ensured.

With regard to majority of these aspects, both the Cycle-Women and the Computer-Shop cases show that low-tech ICT based e-learning options, such as television, are currently socially embedded in the rural realities (see sections 6.2, 6.8 and 7.5). However, all three cases show that their computer and Internet based e-learning models are not adequately socially embedded, which is one reason why respective rural people are not motivated to adopt e-learning as it appears through these models. For instance, in the Cycle-Women case, aspects of social embeddedness are partially addressed, mostly in terms of providing an informal learning atmosphere and support from local community members as the facilitators, who are skilled in ICT. However, issues around trust, contextual significance of the content, and rural people's effective participations, are not adequately addressed, which eventually discourage respective rural people from adopting e-learning. In the Computer-Shop case, aspects of social embeddedness are also only partially addressed, mostly in terms of providing an informal learning atmosphere, support from local community members as the facilitators, and context specific content. Both the cases do not address social embeddedness aspects around trust, in a way rural people expect, and this approach considerably limits rural people's acceptance of the respective e-learning models and affects their overall understanding of the usefulness of e-learning as a means of their wellbeing achievement.

In the Internet-Freelancing case, the impediment that limits the social embeddedness aspect of its e-learning model is respective rural people's limited understanding of the Internet, e-learning, and applications of e-learning in Internet freelancing profession. In this case, e-learning is known to rural people only through its involvement in developing web programming skills for Internet freelancing. Despite prospects for economic gains, Internet freelancing is not recognised by rural people as an accepted profession. This lack of social recognition for this profession hinders the acceptance of the e-learning model of this case by respective ordinary rural people, except the web programming enthusiasts who find it useful. Here, social embeddedness comes into being in terms of overall social acceptance and/or recognition. Despite economic empowerment, even successful Internet freelancers are discouraged to pursue the Internet freelancing profession because it can not ensure their wellbeing achievements in the areas of social life, due to a lack of social acceptance and/or recognition of it. In this particular case, it can be argued that e-learning can become an effective means of wellbeing achievement by enabling the web programming enthusiasts to pursue an Internet freelancing profession and having economic gains, but only when this means of wellbeing achievement conforms to the respective social embeddedness aspects.

Therefore, e-learning can work as a means of wellbeing achievement for the rural people in Bangladesh, but it is most effective when it is socially embedded rather than positioned as an exogenous element (Mansell 2014). It can thus be argued that "throwing gadgets at social problems isn't effective", when they are not socially embedded in the ways respective rural people agree with (Toyama 2015, p20).

9.6. Discussion of the central research question

My central research question: **how might learning through electronic means (e-learning) address wellbeing of those in poverty in Bangladesh?**

Discussions of my supplementary research questions above indicate that e-learning can work as a means of wellbeing achievement for rural people and it does it by offering them with opportunities for learning and developing awareness, skills and knowledge in the areas of life and livelihood. By minimising barriers including gender inequality which is supported by a strong patriarchal culture, it lets rural people have enhanced freedom to learn and develop awareness, skills and knowledge through this new means. E-learning also accommodates multiple options to pursue learning, by enabling rural

people to have further preferences. These options are the different types of ICT that are incorporated in the e-learning process and include computer, the Internet, television, radio and mobile phones. Although low-tech ICT options, such as television, radio and mobile phones are already socially embedded to some degree, rural people are also keen to adopt the high-tech ICT options, but only when they can make sense of these with active support from their trusted local experts.

Rural people prefer shared access to computer and Internet based e-learning, but with active support from trusted local experts, such as the high-school teachers, as their facilitators who are trained on ICT. This preference implicates their interest in social learning in the form of communities of practice (Lave & Wenger 1991; Wenger 2009). While shared access helps them with minimising the costs associated with owning required ICT, the facilitator support helps them with their lack of ICT skills and provides them with explanations of the e-learning content in locally intelligible language. This support thus enables them to reach out to their respective zones of proximal development transcending their individual levels of competencies (Vygotsky 1978). However, rural people prioritise trust in the facilitators over their support around providing ICT skills and explanations of the content. They want to rely on the trust relationship because they do not have adequate understanding of e-learning and its usefulness. Trust can therefore be thought of a contextual determinant or condition (Gewirtz 1972). In the case of self-directed e-learning through computer and the Internet, an expert crowd can work as one of the sources of expert knowledge and can provide related content, though crowdsourcing has not yet been integrated in institutional e-learning initiatives. Only a few rural people - predominantly male, educated, have ICT skills and access to the required ICT - can pursue self-directed e-learning. However, in the facilitator supported e-learning model crowdsourcing can also be useful in a similar manner when expert crowds are motivated to make altruistic philanthropic contributions. Nonetheless, it needs further research to understand the roles crowdsourcing can play in rural Bangladesh with regard to transforming e-learning into a means of wellbeing achievement for ordinary rural people.

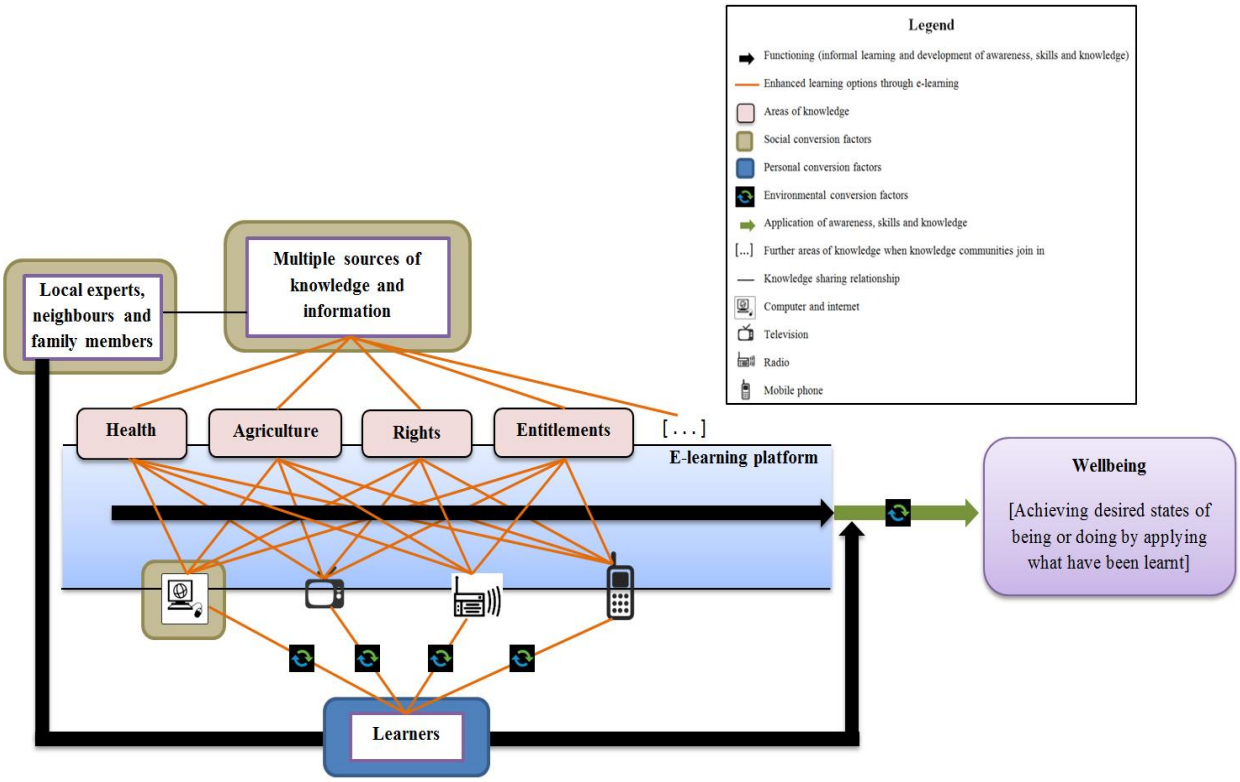
E-learning is not a panacea for rural people's wellbeing, but what it is capable of doing is providing enhanced freedom of learning about life and livelihood, which can eventually enable rural people to achieve their wellbeing, given that adequate context specific content is available. As per Sen's (1999) concept of development, this freedom

of learning can be considered as a developmental gain when rural people can exercise this freedom of learning in achieving their desired state of being and doing, thereby living a life they have reasons to value. According to my cases, although respective practical models of e-learning support rural people's wellbeing achievement, this does not happen as a regular phenomenon. However, as is strongly evident in two of my cases[288], is that lack of consistent funding affects effectiveness of the e-learning initiatives, their impacts, and influences over rural people's understanding of e-learning, and its usefulness in their lived realities. This has considerable impact over rural people's adoption of e-learning, given the persisting gap between their understanding of the usefulness of e-learning and the understandings of the ICT and development experts in Bangladesh in this regard. However, rural people believe that with the help of local high-school teachers, who they want as their trusted local expert facilitators, they can improve their understanding of e-learning, when respective professionals and scholars will share their respective views.

My empirical data inform the following overall schematic (Figure 9.2) of the main aspects of e-learning, and how e-learning can support rural people's wellbeing achievement. It outlines the ways e-learning might be established as a means of rural people's wellbeing achievement through learning and developing awareness, skills and knowledge, which can support them achieve their desired states of being and doing. In

[288] The Cycle-Women case and the Computer-Shop case.

Figure 9.2: Wellbeing through e-learning in rural Bangladesh



the above diagram, the factors that shape rural people's adoption of e-learning are shown as different conversion factors, categorised as personal, social, and environmental conversion factors. These factors can be considered equivalent to what is conceived as contextual determinants or conditions in social learning (Gewirtz 1972). Personal conversion factors include characteristics of the person as learner, such as language proficiency, education, literacy, ICT skills, and understanding of e-learning. Social conversion factors are the ones that depend on respective society the learner lives in, and include trust relationships with the local facilitator, scopes for shared access to ICT within the community, and community access point. Views from the knowledge communities about the usefulness of e-learning, and their contributions to the development of context specific content can also work as social conversion factors. Environmental conversion factors include ICT infrastructure, ICT product market, local technical support on ICT, and goods and services, which are required when rural people apply what they learn through e-learning. Relevant policy can also work as an environmental conversion factor. These factors are specific to the context e-learning is concerned about and thereby constitute a dynamic list of factors.

The diagram (Figure 9.2) shows two pathways of functioning with regard to informal learning and development of awareness, skills and knowledge. The one which links the learner with the particular source of knowledge comprising local experts, neighbours and family members, correlates rural people's usual learning pattern. The other one shows an e-learning based learning approach, which links the learner with multiple sources of knowledge through multiple pathways, corresponding multiple learning opportunities, and thereby enhanced degrees of freedom. Based on this schematic diagram, different practical models of e-learning, specific to the respective contexts can be developed.

Discussions of my three supplementary research questions argue for three different prerequisites to conceptualise e-learning as a means of rural people's wellbeing achievement. Incorporating these three prerequisites, the schematic diagram (Figure 9.2) above demonstrates a conceptual framework of how e-learning can support rural people's wellbeing. Discussion of the first supplementary research question argues for a specific configuration of the e-learning conversion factors. Discussion of the second supplementary research question argues for a particular arrangement of resources, coherent with the configuration of the e-learning conversion factors. Discussion of the third supplementary research question argues for conformity among a set of aspects of social embeddedness, specific to the context of rural Bangladesh. This is particularly important that the resource arrangement is made in accordance with the specific configuration of the e-learning conversion factors. However, to get e-learning conversion factors, arrangement of the resources, and aspects of the social embeddedness working together, it needs a distinctive type of support as a catalyst to trigger functionality of these prerequisites. The support need to be local, but knowledgeable and trustworthy, to inform rural people about the potentials of e-learning, in order to enable them make informed decisions around adopting e-learning as a means of their wellbeing achievement. My empirical data show that local high-school teachers, who are skilled in ICT, can play the role of this distinctive local support as the catalyst to position e-learning as a means of wellbeing among rural people in Bangladesh.

Therefore, the key claim of my research is that e-learning can support rural people's wellbeing achievements through offering freedom of learning. However, it is most effective when a trusted knowledgeable local support can work as a catalyst in getting

the e-learning conversion factors, the required resources and the aspects of social embeddedness around e-learning work together.

9.7. Conclusion

The legitimacy of conceiving e-learning as a means of achieving wellbeing and thereby as a tool for development is grounded in the acclaimed relationships among learning, knowledge and development (Chambers 1983; Mansell 1998; Terzi 2007; World Bank 1999). The discussions above show that e-learning in principle can work as a means of wellbeing for those living in situations of poverty in rural Bangladesh. It can help learners overcome or minimise a range of barriers which impede their learning and the barriers include patriarchy, labour intensive lifestyle, lack of solvency or poor economic status and institutional capacity constraints around supporting informal means of learning. However, it is not a taken-for-granted phenomenon and depends on several factors in order to become an effective means of learning for ordinary rural people to help them achieve their wellbeing. The main factors include - trust in the contents, the facilitators and the implementers of the e-learning initiatives; use of video clip type content with real-life demonstrations; consistent funding; and support from local community. The discussions above also indicate that crowdsourcing can enhance effectiveness of e-learning experience through its contributions to sharing of expert knowledge as well as to creation of contents. Despite the prospects for e-learning in supporting wellbeing achievement, rural people have limited understanding of e-learning and its potentials around their wellbeing achievements. However, they are keen to know about e-learning and its potentials through their trusted local experts in order to enable them adopt e-learning through making an informed approach. In the existing rural reality, a distinctive local support can be argued to make this happen.

Chapter 10
Conclusion

10.1. Introduction

My research seeks to conceptualise e-learning as a means of wellbeing achievement for those living in situations of poverty in rural Bangladesh. In order to do that, I set three objectives: to understand how learning relates to improving wellbeing in rural realities; to understand how rural people can manage the resources required for e-learning; and to understand how e-learning needs to be embedded in the rural reality. I developed four research questions to address these objectives, three of which were supplementary research questions to address each of these objectives, and the central research question to develop an overarching perspective. These research questions correspond to the theoretical perspective of my research, which is grounded in Sen's (1985) capability approach framework. Following this framework, I conceptualise wellbeing as achievement of the particular state of being or doing, which a person values, by learning through exercising freedom. I use a qualitative case study research method to study three cases in order to understand how the practical frameworks of computer and Internet based e-learning operate in different contexts. In order to analyse the meanings those living in poverty in rural Bangladesh attach to e-learning with regard to their sense of wellbeing, I adopt an interpretivist approach, which is also coherent with Sen's (1985) capability approach framework (Robeyns 2002).

The main argument of my thesis is that e-learning works as a way of fostering rural people's wellbeing achievement through freedom of learning. It can help improve their wellbeing, by helping them to deal with, labour intensive lifestyles, lack of solvency or poor economic status, gender inequalities, and limited institutional provisions for informal as well as formal means of learning. However, my research found that improving sense of wellbeing through learning and developing awareness, skills and knowledge by means of e-learning, depends on a range of factors. These are:

- Trust relationships among the learners, the contents and the facilitators. Trusted facilitators are expected to support, when e-learning is conducted through shared access to computer and Internet.
- Adequate contextually meaningful video clip type content that use real-life demonstrations have substantial influence over the effectiveness of e-learning.

- The use of crowdsourcing as a source of expert knowledge support and to make e-learning effective. Adoption of e-learning is shaped by the realised gains through it, alongside the availability of the ICT devices in local markets, which rural people prefer to use in this regard.
- E-learning being in its infancy in Bangladesh, effectiveness and sustainability of related initiatives critically depends on consistent funding support.

My research also shows that there exists a substantial gap between the ways rural people make sense of computers and the Internet with regard to e-learning, and the ways experts in the areas of ICT and development believe e-learning can become useful in rural people's wellbeing achievement.

10.2. Summary of background

E-learning is conceptualised in a range of ways, but a consensual idea around it, is yet to come into being (Bowles 2004). In most cases, existing models of e-learning focus only on formal education (Collis & Moonen 2001; Salmon 2000, 2004; Meredith & Newton 2003), though formal education has been criticised for failing to effectively support people live a life they have reasons to value (Cohen 2006; Waage *et al.* 2010). In spite of a range of existing concepts around e-learning, a coherent theoretical stance that could explain e-learning for different contexts could not be found (Andrews 2011). Under these circumstances, my research focuses on a new perspective of e-learning, conceptualising it as a means of wellbeing achievement for those living in situations of poverty in rural Bangladesh. Developing from the position that the learner should not be considered as a passive recipient of knowledge (Haythornthwaite & Andrews 2011), and that ICT4D initiatives, which include those around e-learning, are advocated to be pursued in a bottom-up manner (Danila & Mohamed 2013; Dey & Ali 2016; Fors & Moreno 2002), I adopted a bottom-up approach to conceptualise e-learning as a means of wellbeing achievement. Complying with the principles of this approach, I developed the following four research questions.

- Central research question: How might learning through electronic means (e-learning) address wellbeing of those in poverty in Bangladesh?
- First supplementary research question: How are the development of capabilities and e-learning connected?
- Second supplementary research question: How is the adoption of e-learning linked to resources and community support?

- Third supplementary research question: How is e-learning positioned in terms of social embeddedness?

In the following section, I discuss the main conclusions of my research, reflecting on the findings and discussions around my research questions presented in chapter 9.

10.3. Discussion of main conclusions: framework of informed e-learning

My research identifies a new aspect of e-learning which is that it can support rural people to improve their wellbeing. Related literatures I reviewed do not conceptualise e-learning as a means of wellbeing achievement for those living in situations of poverty. My research evidences this aspect of e-learning in the context of rural Bangladesh. My findings provide a ground level perspective of how rural people's wellbeing achievement can be supported by e-learning when wellbeing is conceptualised as achievement of the desired states of being or doing that one values in a given society (Sen 1985, 1993, 1999). The findings discussed (see chapter six, seven, eight and nine) show that for e-learning to work to enhance wellbeing, it requires what I term 'a framework of informed e-learning'. This refers to a framework of e-learning where a trusted knowledgeable local support can help rural people make sense of e-learning and its usefulness in their lived reality so that they can make an informed approach towards it. This particular support can be considered as a contextual determinant or contextual condition which can help rural people exceed their own levels of knowledge and reach out to their zones of proximal development (Gewirtz 1972; Vygotsky 1978). This trusted knowledgeable local support can also help them to access e-learning. The framework is composed of e-learning conversion factors, resources and context specific aspects of social embeddedness, which I discussed in sections 9.3, 9.4 and 9.5. This is significant because it incorporates rural peoples desire to know about e-learning, and the way they want to adopt e-learning in their lived reality. My research strongly suggests that a framework of informed e-learning, made up of e-learning conversion factors, resources and social embeddedness aspects and coordinated by a trusted knowledgeable local support, is able to support rural people enhance their wellbeing.

E-learning supports wellbeing achievement when it is grounded in trust relationships among the learners, the content, and the local facilitators. It offers rural people with opportunities for learning and developing awareness, skills and knowledge around lives and livelihoods which enable them to pursue a life they value. However, this is most

effective when rural people have adequate understanding of e-learning and its usefulness in their lived realities. A knowledgeable and trustworthy local support can help them make sense of e-learning by enabling them to reach out to their zones of proximal development (Vygotsky 1978) and make informed decisions around. While it is argued that education and knowledge can bring developmental outcomes which include wellbeing achievements, this new aspect of e-learning is useful, even in its broader sense, in which it transforms learning opportunities for those living in situations of poverty (Coombs & Ahmed 1974; OECD 2001; UN 2015; UNDESA 2015). E-learning allows rural people to overcome the barriers they typically face while accessing learning opportunities, which include lack of solvency, lack of opportunity, limited institutional capacity, patriarchy and conservative sociocultural norms.

E-learning is accepted by ordinary rural people when they can trust in it. In the case of low-tech ICT based e-learning such as through television, they pursue e-learning when the content is endorsed by the experts they trust in. In the case of high-tech ICT based e-learning such as through computer and the Internet, they are motivated to adopt e-learning when their trusted local experts play the roles of the facilitators. Facilitators offer ordinary rural people technical support to access e-learning through computer and the Internet, as well as explanations of the content in the local language in order to enhance their understanding. These facilitators comprise an essential contextual determinant or condition in this particular community of practice (Gewirtz 1972; Lave & Wenger 1991). Rural people's trust around learning is primarily shaped by their trust in the person from whom they learn, instead of what they are going to learn from that person. This approach shapes their choice of the facilitator. In this regard, they want their local high-school teachers who are trained in ICT to play the roles of the facilitator. This is due in part to the moral influence and expertise of the high-school teachers.[289] Therefore, high-school teachers can become the trusted knowledgeable local support in order to enable rural people to make informed decisions towards adopting e-learning as a means of their wellbeing achievement.

Despite facilitator's support with intelligibility of the e-learning content, the type of the content plays a pivotal role in how they are received. Rural people are motivated to trust

[289] Rural people prefer to rely on the knowledge of these high-school teachers and argue that their facilitation can help them manage the language barriers that they would face while accessing computer and Internet based e-learning. While they rely on the expertise of these teachers to understand the e-learning content, they also argue that video content would be more convenient for them to understand the content better and learn effectively.

in e-learning when it uses video clip type content, specifically those that include real-life demonstrations instead of animated or other type of content. It is an important factor to build rural people's trust in e-learning because real-life demonstrations offer them enhanced understanding of the content, help them minimise literacy barriers, and provide a sense of authenticity. This type of e-learning content also resembles one of their usual ways of learning, which is learning from observations – one of the key ways involved in social learning (Bandura 1977). In the current literature on e-learning which I reviewed, there is a lack of attention paid to and discussion on the use of video clips of this particular type. My study suggests that video clips play a significant role in e-learning. However, further research is required with other people to explore this matter. Certainly, for rural people in developing countries who live in situations of poverty and do not have high levels of formal education, video clips can be useful in e-learning and thereby can supplement the trusted knowledgeable local support.

The trusted knowledgeable local support can help minimise the persisting substantial gap that exists between the ways the group of experts I interviewed conceptualise e-learning as a means of achieving wellbeing, and the ways rural people make sense of computer and Internet with regard to e-learning. As high-school teachers belong to both the knowledge community and the respective local communities and are trusted by respective local people as their gateway to learn about computer and Internet, they might bridge these rural people with experts' broader perceptions of the usefulness of e-learning as a means of wellbeing achievement. Having an understanding of the usefulness of e-learning is pivotal because that helps rural people make an informed approach with regard to accepting e-learning as a means of their wellbeing achievement, and the trusted knowledgeable local support can be of assistance in this regard.

My arguments above form the basis for a proposition that e-learning can work as a means of wellbeing for rural people by offering freedom of learning but with assistance from a trusted knowledgeable local support. Freedom is the fundamental basis of Sen's (1985) capability approach framework. His concepts of development, poverty and wellbeing are also grounded in the ideas of freedom (Sen 1985, 1993, 1999). Freedom of learning might not be equivalent to any of Sen's (1999) five instrumental freedoms (political freedom, [290] economic facilities, [291] social opportunities, [292] protective

[290] Such as, freedom of speech.
[291] Such as, opportunities to use economic resources, which include ICT.

security,[293] and transparency guarantee[294]), which he correlates while conceptualising development, but it can be argued to work as a way of enabling rural people to exercise those freedoms. However, the trusted knowledgeable local support remains as a prerequisite to materialise this freedom. It can be argued that the awareness and knowledge development potentials of e-learning that are also shared by the views of the expert group I interviewed (see section 4.4), can address all these five instrumental freedoms. From a theoretical perspective, this freedom of learning aspect, with regard to rural people's achievement of their desired states of being and/or doing, makes e-learning a means of their wellbeing achievement.

My argument around e-learning conceptualises it beyond formal learning and incorporates enhanced degrees of freedom the learner can experience because it is not constrained by the conformity imposed by formal learning. For instance, the learner can have the ownership of learning, can have time and location independent learning opportunities and can minimise the barriers associated with taking up formal learning opportunities. However, this is not to say that this particular conceptualisation excludes formal learning. It is rather inclusive and accommodates both formal and informal learning with their respective varying degrees of freedom which depend on the context and characteristics of the learner. While the effectiveness of e-learning can be argued to depend on different factors such as the quality of knowledge shared through it and characteristics of the learner, e-learning increases wellbeing by enabling the learners to experience the freedom in learning what they value to learn in order to be able to live a life they have reasons to value. By doing so, e-learning can resolve a limitation of formal education around its lack of effectiveness in enabling the learners to achieve their wellbeing in their lived reality (Cohen 2006). However, the existence of trusted knowledgeable local support remains a precondition or contextual determinant (Gewirtz 1972) that can ensure that rural people are informed of the potentials of e-learning in relation to their lived realities. It can thus be argued that e-learning supports wellbeing achievement by providing the freedom to learn: when people value what they learn, how they learn that, and how that can support achieving their desired states of being and doing which Sen (1985, 1993) conceives as wellbeing achievement.

[292] Such as, access to education and health services.
[293] Such as, social protection to avoid vulnerability and disadvantageous situations.
[294] Such as, assurance of justice.

Discussions of my main arguments above also inform a practical aspect of conceptualising e-learning in the realities of rural Bangladesh. The practical aspect advocates for a trust based informed bottom-up implementation approach in order to establish e-learning as a means of rural people's wellbeing achievement through learning and development of awareness, skills and knowledge that they have reasons to value. An informed bottom-up approach ensures that rural people can make informed decisions around adopting e-learning by linking them with related sources of knowledge with the help of the trusted knowledgeable local support. Rural people's informed approach is pivotal because their inadequately informed approach to related conceptualisations around e-learning and their related decision making can cause the persisting digital divide to continue or become more ingrained. Developing an understanding of technology use is particularly emphasised for their effective adoption, even for people living in developed countries where the majority of the technologies are developed (Brewster *et al*. 2014; Fors & Moreno 2002; Taylor *et al*. 2014; Taylor *et al*. 2015). In the context of developing countries, which usually adapt to the technologies developed in the western world, this shows the gravity and importance of having an understanding of e-learning (Fors & Moreno 2002).

Therefore, in the rural reality, in order to establish e-learning as a means of wellbeing, a trust based informed bottom-up approach can be argued to be the appropriate implementation approach, where the trusted knowledgeable local support plays pivotal roles as the catalyst. However, I must make it clear that the claims of my research remain valid particularly for rural Bangladesh. I would posit further that the claims my research has made can be relevant to the contexts in other developing countries that share social, cultural, economic, political and related infrastructural characteristics similar to those of Bangladesh.

10.4. Recommendations

Reflecting on my findings and the claims I have put forward, I present below a number of recommendations that would aid the establishment of e-learning as a means of wellbeing achievement for the rural people living in situations of poverty in rural Bangladesh.

10.4.1. Use low-tech ICT options to a greater extent

In rural Bangladesh, low-tech ICT options, such as television, mobile phones and radio, should be used to a greater extent than they are now currently being used for e-learning purposes. Mobile phone based interventions should offer free voice call support instead of app based or subscription based SMS services. Context specific e-learning content can be distributed for free and stored in the external memory cards that can be used within the mobile phone. Radios should be made locally available to buy, so that rural people can resume their e-learning practices through radio. In the race of technological convergence and manufacturing of high-tech ICT products, increased supply of radios might not take place automatically. International development partners need to take initiatives in order to support the manufacturing of cheap radios for rural people. Television channels should broadcast programmes reflective of the lives and livelihoods in rural areas, beyond agriculture, and should enhance focus on rural viewers and their needs. Rural people's trusted experts should be involved in the programmes. Furthermore, GoB should take the necessary steps on a priority basis to materialise its plan it made in 2010, about establishing a development television channel for rural people (A2I 2012).

10.4.2. Produce context specific video content with real-life demonstrations

In order to address the existing lack of context specific content, adequate context specific video content with real-life demonstrations should be produced on a priority basis, before rural people develop an understanding that e-learning and respective content are not relevant to their lived realities. Local students in rural areas can be engaged with to develop context specific video content in the local language, using low-tech ICT, such as camera embedded mobile phones. Professionals and/or educated individuals can also be involved in this process to support a large volume of content production, by means of crowdsourcing. This community driven approach towards the development of context specific content might bring in enhanced sustainability. It can also facilitate preservation of local knowledge in the reality where increased digital codification of knowledge risks extinction of indigenous knowledge, embedded in the digitally excluded parts of the world. Institutional initiatives and crowdsourcing supports should be integrated to expedite the creation of context specific video content with real-life demonstrations. Rural people's trusted experts should be involved in the content development process, so that the content can carry their endorsement.

10.4.3. Engage local high-school teachers and the high-schools

Local high-school teachers, who are trained by the GoB in ICT, should be involved as trusted local facilitators to promote computer and Internet based e-learning. These local high-school teachers should motivate and guide local students and local educated people to develop context specific content in the local language for e-learning purposes. GoB and development partners should promote facilitator supported shared access to ICT and e-learning, at local high-schools as the community level access points.[295] This will facilitate minimising the gender disparity in accessing ICT and e-learning in rural Bangladesh, because local schools are considered as the comfort zones for convenient access by both men and women in rural areas. Existing computers at the local high-schools, which are provided by GoB, should be used to promote e-learning with the help of respective teachers.

10.4.4. Government as the trust anchor should develop initiatives

GoB, as rural people's trust anchor, should undertake substantial and effective initiatives, first to familiarise rural people with different ICT options, and then to inform them about how those ICT options can help rural people live a better life by means of e-learning. It is important to develop rural people's awareness about and interests in ICT, before promoting adoption of ICT and e-learning. However, it is imperative that in doing so, GoB emphasises both high-tech and low-tech ICT options instead of emphasising only the high-tech ICT options.

10.4.5. Ensure consistent funding support

Consistent funding support is essential in order to effectively implement initiatives around e-learning and to ensure their sustainable impacts. Lack of consistent funding eventually stops respective interventions, leaving an impression among rural people that respective interventions are temporary. This discourages rural people to adopt e-learning as a new means of learning and to consider it a part of their lived reality. Funding support need to be socially responsible, preferably coming from GoB and/or international or national development partners, instead of commercial organisations which might impose vested commercial interests overshadowing the developmental outcomes.

[295] Sponsorship support from commercial organisations should be checked against any biased influence over the development of knowledge, and profit making motive, which might affect ultimate developmental outcomes.

10.4.6. Implement e-learning initiatives following an informed bottom-up approach

As rural people do not have adequate knowledge about e-learning and its usefulness in their wellbeing achievements, they first need to develop this awareness in order to be able to make an informed approach towards adopting e-learning. Therefore, instead of an ordinary bottom-up approach, which is particularly advocated for ICT4D initiatives, including those around e-learning, an informed bottom-up approach should be pursued while implementing e-learning initiatives, conceptualising it as a means of rural people's wellbeing achievements (Danila & Mohamed 2013; Dey & Ali 2016; Fors & Moreno 2002). This implementing approach offers both the benefits of a bottom-up approach and the provisions for rural people to develop an understanding of e-learning and its usefulness, before deciding to adopt it in their lived realities. Knowledge communities such as academics, researchers, and professionals should be connected with rural people through their trusted local experts (the high-school teachers) to ensure that rural people can develop an understanding of what e-learning is and how it can help them achieve their wellbeing, before it is pursued to be adopted by them.

10.5. Further research questions

Throughout my research process, I identified several areas where future research initiatives could contribute. Furthermore, my research findings identified areas that needed further investigation. I present below the areas where future research initiatives are required and what the further research questions should be.

Development of context specific e-learning content has been a persisting challenge to the adoption of e-learning in rural Bangladesh. I would recommend research that sought to develop a model to address this issue and would consider analysing the prospects of contributions from crowdsourcing, in addition to the institutional contributions in this respect. Therefore, a related further research question should be: how can the context specific e-learning content be produced in a sustainable manner?

Future research initiatives should also focus on understanding how previous e-learning practices around radio can be reinforced, particularly by making radios available at local level. It is essential on the ground that higher emphasis on promoting high-tech ICT options (such as computers and the Internet) by the ICT4D project implementers as well as the GoB has been decreasing the use of socially embedded low-tech ICT options (such as radio). This research might predict the impacts of increased supply of radios in

rural markets, in terms of the resulting changes in learning practices around e-learning. Research on this issue might offer insights on how changes in technologies impact learning practices around those and how these changes eventually affect digital inclusion in developing countries. Wessels's (2010) framework on the social and technological changes in the context of the Internet can work as a guideline for this future research. Therefore, a related further research question should be: how will rural people respond to reintroduction of radio as a means of their e-learning?

In the given patriarchal rural reality, I would recommend future research on how gender equity in ICT access can be achieved. This is particularly important if the digital divide is to be minimised in an effective manner and e-learning through different ICT options is to be established as a socially embedded means of learning. Future research on this issue would also offer insights on the impacts of gender specific institutional approaches towards digital inclusion over gender equity in access to ICT and the ownership of it. Therefore, a related further research question should be: how can gender equity in access to ICT in Bangladesh be achieved in a consistent manner?

As demonstrated throughout, my research indicates the ways e-learning can work as a means of wellbeing achievement for rural people living in situations of poverty in Bangladesh. My research offers an original contribution to knowledge on which these further research questions can develop, providing further understanding on the relationship between e-learning and wellbeing.

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Appendices

Appendix I

Poverty in the eyes of those living in situations of poverty in rural Bangladesh

Rural people living in situations of poverty in Bangladesh conceive poverty in a number of ways and some of these identified by Borhan (2003) are presented below:

i) Those people are categorised as 'poor' who sometimes have a small piece of land which they cultivate, in addition to working as day-labourers. Rate of education is better among these people and some might have children who have graduated from college. These people generally possess some basic pieces of furniture like bed, chairs and tables, along with electronic devices like radios and cassette players. They use '*kutcha'* latrine (non-sanitary toilet) and drink water from wells.

ii) The 'poorest' are those who are mostly day-labourers and some of them might have a very small piece of land. They earn about BDT100 (about £0.76) to BDT120 (about £0.93) per day. Despite their poor economic situation, some of their children study up to a graduate level while most others' achieve at least a primary level of education. They are able to eat two meals a day with fish and vegetable curry. Although generally they do not have any other furniture than a bed, they possess a few electronic devices like radios and cassette players. They use '*kutcha'* latrine (non-sanitary toilet) and drink water from wells.

iii) 'Poorest of the poor' are those who generally do not have any homestead and live in the land area of absentee landowners. Only a few of them have tiny patches of homestead. They live on fishing, domestic jobs, begging, and day labour. They drink water from tube-wells that belong to relatively well-off members of respective villages. Generally, they eat three meals a day with vegetables and occasionally with fish, but eat two meals during crisis periods. Literacy rate is virtually zero and some of them can just sign their names.

iv) 'Share-croppers' are those people who borrow other's lands and cultivate crops that they share with landowners at some specific ratios. Only a few of them own tiny homestead while rest of them have nothing. None of them have arable land.

v) 'Porter' refers to those who sell their labour. Generally, they are completely landless though a few of them might have tiny homestead.

vi) ‘Beggar’ refers to those who survive by begging alms. They are the most vulnerable group, though comprise a minority of the locality. Sometimes some of the able bodied beggars sell their labour in agricultural work or other toilsome works like weaving mat and fishing in the rainy season.

vii) ‘Lower category’ refers to those who are completely landless and their occupational opportunities are limited to fishing, selling goods, tailoring, priesthood, and a few others. They are educated up to secondary level that is much better a position than other poor groups.

viii) ‘Helpless poor’ people have neither homestead nor arable land. They are engaged in day labour, fishing, domestic help, and begging. They are characterised as having no material asset and generally suffer from scarcity of food. Despite their economic distress they sometimes need to manage dowry in marriage events amounting BDR10,000 (about £77.52) to BDT15,000 (about £116.28) that further traps them into poverty.

ix) ‘Chronic extreme poor’ are perceived as the most vulnerable who has limited options for risk-taking and using personal human labour due to old age, physical disability, chronic illness, and most importantly lack of bargaining position and power in the community. They confront the highest degree of physical, financial, and psychological vulnerability though nature and source of these vulnerabilities are not similar and vary from village to village and even household to household. However, transient extreme poor in a community remain in a relatively better condition compared to chronic extreme poor, as they have multiple options for selling labour. Their degree of vulnerability is less, compared to that of chronic extreme poor due to their reasonably strong coping mechanism with crisis or lean period and ability to take risks. They even possess better bargaining power and position in the community than chronic extreme poor. In brief, chronic extreme poor are perceived as aged, disabled, chronically ill, aged female-headed household, and beggar; and household features of chronic extreme poverty are perceived as child burdened household, household with unmarried female member, large family with single earner, and death of principle earning member.

Appendix II

Different Perspectives of e-Readiness

Focus (Year)	Definition	Developer
Value creation (2004)	Ability to pursue value creation opportunities facilitated by the use of the Internet	Composite Information Systems Laboratory (CISL), Massachusetts Institute of Technology (MIT)
ICT; Internet applications; e-government (2000)	An 'e-ready' society is one that has the necessary physical infrastructure (high bandwidth, reliability, and affordable prices); integrated current ICTs throughout businesses (e-commerce, local ICT sector), communities (local content, many organisations online, ICTs used in everyday life, ICTs taught in schools), and the government (e-government); strong telecommunications competition; independent regulation with a commitment to universal access; and no limits on trade or foreign investment	Information Technologies Group (ITG) of Centre for International Development (CID) at Harvard University
e-society (2000)	An 'e-ready' country has extensive usage of computers in schools, businesses, government, and homes; affordable reliable access in a competitive market; free trade; skilled workforces and training in schools; a culture of creativity; government-business partnerships; transparency and stability in government and an evenly enforced legal system; secure networks and personal privacy; and regulations allowing digital signatures and encryption	McConnell International with World Information Technology and Services Alliance (WITSA)
Promotion of free trade, regionally and internationally (2000)	A country that is 'ready' for e-commerce has free trade, industry self-regulation, ease of exports, and compliance with international standards and trade agreements	APEC Electronic Commerce Steering Group
Facilitation of e-commerce (2000)	An 'e-ready' country requires consumer trust in ecommerce security and privacy; better security technology; more trained workers and lower training costs; less restrictive public policy; new business practices adapted to the information age; and lower costs for e-commerce technology	WITSA
Network access and appropriate applications (1998)	An 'e-ready' community has high-speed access in a competitive market; with constant access and application of ICTs in schools, government offices, businesses, healthcare facilities and homes; user privacy and online security; and government policies which are favourable to promoting connectedness and use of the network.	CSPP

Source: Bui *et al.* (2003)

Appendix III

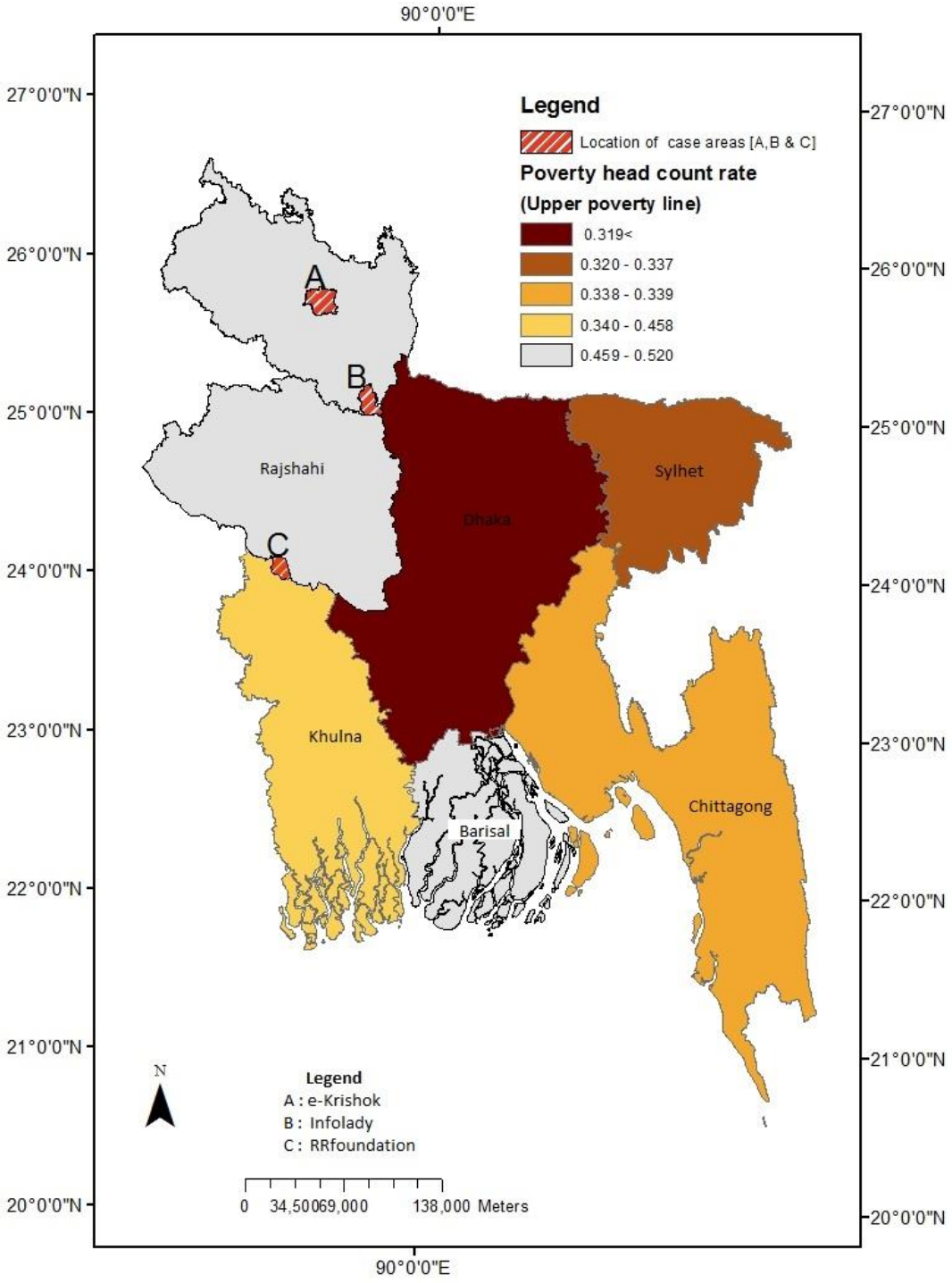
E-readiness Assessment for Bangladesh

Theme	Factors
Network Access and Internet Penetration	Information Infrastructure Internet Access and Availability Internet Affordability Quality Assurance Network Hardware and Software situation Service and Support
Networked Learning (E- learning)	Access to Education Institutes Extended Education using ICT Development of ICT Workforce Future Provisions
Networked Society (E-governance)	Individuals and Organizations Online Locally Relevant Content Effect of ICT in Everyday Life Scope of ICT in Workplace
Networked Economy (E-commerce)	ICT Based Employment Opportunity B2C Electronic Commerce B2B Electronic Commerce E-Government
Network Policy	Telecommunications Regulation ICT Policy

Source: Bangladesh Country Gateway (2002)

Appendix IV

Poverty map of Bangladesh and my case locations



Source: I updated and modified, based on the poverty map developed by BBS, WB & WFP (2009). In the map, A, B, and C correspond to the locations of the Computer-Shop case, the Cycle-Women case, and the Internet-Freelancing case.

Appendix V

Category wise profile of the respondents

Category	Gender aspect in female/male ratio	Total number
Project officials of the CCycle-Women case	2:6	8
Project officials of Computer-Shop case	2:6	8
Project officials of Internet-Freelancing case	0:3	3
Government information commissioner and officials expert in agriculture, women empowerment and ICT	1:2	3
Participants from the Cycle-Women case	41:4	45
Local opinion leaders from the Cycle-Women case	0:2	2
Participants from Computer-Shop case	0:18	18
Local opinion leaders from Computer-Shop case	0:2	2
Participants from Internet-Freelancing case	0:35	35
Members of knowledge community: agricultural expert	0:2	2
Members of knowledge community: development expert	1:1	2
Members of knowledge community: ICT expert	0:3	3
Members of knowledge community: education and ICT expert	0:1	1
Members of knowledge community: policy expert	0:1	1
Members of knowledge community: microfinance expert	0:1	1
Members of knowledge community: gender[296] expert	2:0	2
Members of knowledge community: women entrepreneurship development expert	1:0	1
Members of knowledge community: community empowerment expert	0:1	1
Members of knowledge community: ICT and community empowerment expert	0:1	1
Members of knowledge community: ICT and agricultural expert	1:0	1
Members of knowledge community: economics and development expert	0:2	2
Total	**51:91**	**142**

[296] In Bangladesh, it is a common understanding that gender experts are those who work on women's studies and related areas such as women in development, women empowerment and the like.

Appendix VI

Detailed profile of the respondents

ID	Name[297]	Gender	Respondent category	Brief characteristic
KC1	Akram	M	Knowledge community (Agriculture)	Senior academic and researcher on agriculture
KC2	Meraz	M	Knowledge community (Agriculture)	Veteran agricultural activist
KC3	Azad	M	Knowledge community (Development)	Head of an international development organisation and expert on development and e-learning
KC4	Jui	F	Knowledge community (Development)	Academic expert on development and development practitioner
KC5	Qadry	M	Knowledge community (ICT)	Senior academic and ICT researcher
KC6	Kaykobad	M	Knowledge community (ICT)	Senior academic and ICT researcher
KC7	Sorower	M	Knowledge community (ICT)	Academic and ICT researcher
KC8	Habib	M	Knowledge community (Education and ICT)	E-learning expert at an international development organisation
KC9	Mahfuz	M	Knowledge community (Policy)	Head of a local think tank (policy) and researcher on economy and development
KC10	Khalili	M	Knowledge community (Microfinance)	Senior academic, head of a local research institute which promotes microfinance
KC11	Nazmunnahar	F	Knowledge community (gender)	Senior academic and researcher on gender studies and development
KC12	Banu	F	Knowledge community (gender)	Senior academic, writer and veteran activist on gender issues
KC13	Srilekha	F	Knowledge community (Women entrepreneurship development)	Institutional figurehead at national level organisation on women entrepreneurs
KC14	Farhan	M	Knowledge community (Community empowerment)	Institutional figurehead at an international development organisation on community empowerment
KC15	Aziz	M	Knowledge community (ICT and community empowerment)	Institutional figurehead at an international development organisation on ICT and community empowerment
KC16	Papiya	F	Knowledge community (ICT and agricultural)	Institutional figurehead at a national level development organisation on ICT and agriculture
KC17	Yusuf	M	Knowledge community (development economics)	Globally esteemed economist and development expert, specialised in poverty, women's empowerment and microcredit
KC18	Bhattacharya	M	Knowledge community (development economics)	Research head of a local development research organisation and an internationally recognised development economist
GO1	Samantha	F	Government official (information commissioner)	Senior academic, gender expert and Information Commissioner of

(continued)

[297] Anonymised

				Bangladesh government
GO2	Kamal	M	Government official (agriculture)	Expert on project evaluation in agriculture sector
GO3	Jamilur	M	Government official (ICT and women empowerment)	In charge of the projects on ICT and women empowerment
PO1	Ziniya	F	Project official (the Cycle-Women case)	Head of the project at implementing local NGO
PO2	Layla	F	Project official (the Cycle-Women case)	ICT expert at implementing local NGO
PO3	Raihan	M	Project official (the Cycle-Women case)	Head of the project at Tech-Net
PO4	Rupom	M	Project official (the Cycle-Women case)	Advisor of the project at Tech-Net
PO5	Ashit	M	Project official (the Cycle-Women case)	Ex head of the project at implementing local NGO
PO6	Shahadat	M	Project official (the Cycle-Women case)	Chairman of the implementing local NGO
PO7	Kishor	M	Project official (the Cycle-Women case)	ICT support manager at implementing local NGO
PO8	Sadik	M	Project official (the Cycle-Women case)	Executive officer at implementing local NGO
PO9	Nayla	F	Project official (the Computer-Shop case)	Officer at Agro-Tech
PO10	Rukshana	F	Project official (the Computer-Shop case)	Officer at Agro-Tech
PO11	Shamsu	M	Project official (the Computer-Shop case)	Head of Agro-Tech
PO12	Milad	M	Project official (the Computer-Shop case)	Computer shop owner cum operator
PO13	Dewan	M	Project official (the Computer-Shop case)	Facilitator recruited by Milad [PO12]
PO14	Faruk	M	Project official (the Computer-Shop case)	Computer shop owner cum operator
PO15	Rajekul	M	Project official (the Computer-Shop case)	Facilitator recruited by Rajjak
PO16	Shayedul	M	Project official (the Computer-Shop case)	Computer shop owner cum operator
PO17	Raisul	M	Project official cum project participant (the Internet-Freelancing case)	The Initiator, expert in ICT and freelancing
PO18	Tanvir	M	Project official cum project participant (the Internet-Freelancing case)	Raisul's cousin and supporting expert on ICT and freelancing
PO19	Rabiul	M	Project official cum project participant (the Internet-Freelancing case)	Raisul's brother and supporting expert on ICT and freelancing
OL1	Joydeb	M	Local opinion leader (the Cycle-Women case)	Head teacher at Kalkini High-School
OL2	Sabur	M	Local opinion leader (the Cycle-Women case)	Computer teacher at Kalkini High-School
OL3	Belal	M	Local opinion leader (the Computer-Shop case)	Computer teacher at Bario-Kunda High-School
OL4	Rahamat	M	Local opinion leader (the Computer-Shop case)	Computer teacher at Gaibandha AKJ High-School
BC1	Saleha	F	Project participant	Service provider
BC2	Soheli	F	Project participant	Saleha's [BC1] S1 group member
BC3	Anwar	M	Project participant	Farmer and Saleha's [BC1] group member
BC4	Kalim	M	Project participant	Farmer and Saleha's [BC1] S2service user
BC5	Sohili Khatun	F	Project participant	Saleha's [BC1] S1 group member

(continued)

BC6	Mamata	F	Project participant	Saleha's [BC1] S1 group member
BC7	Ambala	F	Project participant	Saleha's [BC1] S1 group member
BC8	Mrinalini	F	Project participant	Saleha's [BC1] S2 group member
BC9	Jonaki Begum	F	Project participant	Saleha's [BC1] S1 group member
BC10	Shahana	F	Project participant	Saleha's [BC1] S1 group member
BC11	Suchorita	F	Project participant	Saleha's [BC1] S1 group member
BC12	Jorina	F	Project participant	Saleha's [BC1] S2 group member
BC13	Sheela	F	Project participant	Saleha's [BC1] S1 group member
BC14	Rabiya	F	Project participant	Saleha's [BC1] S1 group member
BC15	Lokman	M	Project participant	Farmer and Saleha's [BC1] S2 group member
BC16	Tania	F	Project participant	Saleha's [BC1] S2 group member
BC17	Nurunnahar	F	Project participant	Saleha's [BC1] S2 group member
BC18	Jayantika	F	Project participant	Service provider
BC19	Kolpona	F	Project participant	Saleha's [BC1] S2 group member
BC20	Salma	F	Project participant	Jayantika's [BC18] JR group member
BC21	Julekha	F	Project participant	Jayantika's [BC18] JR group member
BC22	Joba	F	Project participant	Jayantika's [BC18] JR group member
BC23	Ayesha	F	Project participant	Jayantika's [BC18] JR group member
BC24	Jaynab	F	Project participant	Service provider
BC25	Asiron	F	Project participant	Jaynab's [BC24] JN group member
BC26	Shuma	F	Project participant	Jaynab's [BC24] JN group member
BC27	Shabana	F	Project participant	Jaynab's [BC24] JN group member
BC28	Kushum	F	Project participant	Jaynab's [BC24] JN group member
BC29	Jereen	F	Project participant	Jaynab's [BC24] JN group member
BC30	Fatema	F	Project participant	Service provider
BC31	Suporna	F	Project participant	Service provider
BC32	Shibani	F	Project participant	Jaynab's [BC24] JN group member
BC33	Rekha	F	Project participant	Jaynab's [BC24] JN group member
BC34	Bobita	F	Project participant	Jaynab's [BC24] JN group member
BC35	Khorsheda	F	Project participant	Jaynab's [BC24] JN group member
BC36	Mabia	F	Project participant	Jaynab's [BC24] JN group member
BC37	Damini	F	Project participant	Jayantika's [BC18] JR group member
BC38	Kohinur	F	Project participant	Saleha's [BC1] S2 group member
BC39	Kollani	F	Project participant	Saleha's [BC1] S2 group member
BC40	Aleya	F	Project participant	Saleha's [BC1] S2 group member
BC41	Jabeda	F	Project participant	Saleha's [BC1] S2 group member
BC42	Tahmina	F	Project participant	Saleha's [BC1] S2 group member
BC43	Champa	F	Project participant	Saleha's [BC1] S2 group member
BC44	Khaleda	F	Project participant	Saleha's [BC1] S2 group member
BC45	Joitonnesa	F	Project participant	Saleha's [BC1] S2 group member
BC46	Aslam	M	Project participant	Rajekul's [PO15] service user
BC47	Mosleh	M	Project participant	Dewan's [PO13] service user
BC48	Nurul	M	Project participant	Dewan's [PO13] service user
BC49	Minto	M	Project participant	Rajekul's [PO15] service user
BC50	Amin	M	Project participant	Dewan's [PO13] service user

(continued)

BC51	Zaman	M	Project participant	Dewan's [PO13] service user
BC52	Khalek	M	Project participant	Rajekul's [PO15] service user
BC53	Layes	M	Project participant	Rajekul's [PO15] service user
BC54	Shamim	M	Project participant	Rajekul's [PO15] service user
BC55	Iqbal	M	Project participant	Rajekul's [PO15] service user
BC56	Afsar	M	Project participant	Dewan's [PO13] service user
BC57	Shamshu	M	Project participant	Dewan's [PO13] service user
BC58	Sohel	M	Project participant	Dewan's [PO13] service user
BC59	Firoz	M	Project participant	Rajekul's [PO15] service user
BC60	Zahid	M	Project participant	Dewan's [PO13] service user
BC61	Nurullah	M	Project participant	Dewan's [PO13] service user
BC62	Molla	M	Project participant	Dewan's [PO13] service user
BC63	Kawsar	M	Project participant	Rajekul's [PO15] service user
BC64	Akmal	M	Project participant (residential trainee)	Graduate student from Chittagong
BC65	Rana	M	Project participant (residential trainee)	Studies computer science at a public university in Dhaka
BC66	Turjo	M	Project participant (residential trainee)	Graduate student from Khulna
BC67	Raihanuzzaman	M	Project participant (residential trainee)	Self employed from Jessor
BC68	Sajid	M	Project participant (residential trainee)	Internet freelancer living in a village of Rajshahi
BC69	Asad	M	Project participant (residential trainee)	Internet freelancer from Tangail
BC70	Arman	M	Project participant (residential trainee)	Internet freelancer from Noakhali
BC71	Mokbul	M	Project participant (residential trainee)	Runs a small business in Dhaka
BC72	Raj	M	Project participant (residential trainee)	Internet freelancer from Sylhet
BC73	Rubel	M	Project participant (residential trainee)	Internet freelancer from Dinajpur
BC74	Riyad	M	Project participant (residential trainee)	Internet freelancer in a village in the district of Noakhali
BC75	Shakhawat	M	Project participant (residential trainee)	Job seeker from a remote village in Rangpur
BC76	Jayanta	M	Project participant (residential trainee)	From Kishoreganj, family lives on farming
BC77	Rafique	M	Project participant (residential trainee)	Internet freelancer from Pabna
BC78	Neyaz	M	Project participant (residential trainee)	Internet freelancer from Comilla
BC79	Jabbar	M	Project participant (residential trainee)	Internet freelancer from Barishal
BC80	Sujon	M	Project participant (residential trainee)	Internet freelancer from Kushtia
BC81	Liakat	M	Project participant (residential trainee)	Job seeker from Magura
BC82	Shawkat	M	Project participant (residential trainee)	Self employed from Dhaka
BC83	Farid	M	Project participant (residential trainee)	Job seeker from Magura
BC84	Abul	M	Project participant (residential trainee)	Graduate student from Bhola
BC85	Mofiz	M	Project participant (residential trainee)	Graduate student from Bhola
BC86	Muhit	M	Project participant (residential trainee)	Completed 12 years education, from Cox's Bazar
BC87	Hossain	M	Project participant (residential trainee)	Job seeker from Cox's Bazar

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BC88	Joydev	M	Project participant (residential trainee)	Graduate job seeker from Manikganj
BC89	Shibli	M	Project participant (residential trainee)	Graduate job seeker from Feni
BC90	Zubaer	M	Project participant (residential trainee)	Graduate job seeker from Dhaka
BC91	Mamun	M	Project participant (residential trainee)	Graduate job seeker from Gazipur
BC92	Jashim	M	Project participant (residential trainee)	Graduate job seeker from Chittagong
BC93	Hasan	M	Project participant (residential trainee)	Graduate student from Dhaka
BC94	Musabber	M	Project participant (residential trainee)	Graduate job seeker from Dhaka
BC95	Rifat	M	Project participant (residential trainee)	Graduate student from Dhaka
BC96	Sharif	M	Project participant (residential trainee)	Graduate student from Dinajpur
BC97	Tareq	M	Project participant (residential trainee)	Runs small business in Jamalpur
BC98	Rezbi	M	Project participant (residential trainee)	Graduate student from Mymensingh

Appendix VII

My data collection methods

Method	Count	Number of respondents	Affiliation
Interview	62	18	Members of knowledge communities
		3	Government officials
		8	Project officials of the Cycle-Women case
		7	Beneficiaries of the Cycle-Women case (2 also joined FGD)
		2	Local opinion leader of the Cycle-Women case
		8	Project officials of the Computer-Shop case
		3	Beneficiaries of the Computer-Shop case (3 also joined FGD)
		2	Local opinion leader of the Computer-Shop case
		3	Project officials of the Internet-Freelancing case
		8	Beneficiaries of the Internet-Freelancing case
Focus Group Discussion	13	4	Beneficiaries of the Cycle-Women case
		2	Beneficiaries of the Cycle-Women case
		6	Beneficiaries of the Cycle-Women case
		13	Beneficiaries of the Cycle-Women case
		15	Beneficiaries of the Cycle-Women case (2 were interviewed as well)
		4	Beneficiaries of the Computer-Shop case
		2	Beneficiaries of the Computer-Shop case
		4	Beneficiaries of the Computer-Shop case
		2	Beneficiaries of the Computer-Shop case
		4	Beneficiaries of the Computer-Shop case (2 were interviewed as well)
		2	Beneficiaries of the Computer-Shop case (1 was interviewed as well)
		17	Beneficiaries of the Internet-Freelancing case (5 were interviewed as well)
		18	Beneficiaries of the Internet-Freelancing case (3 were interviewed as well)

Appendix VIII

List of questions to interview the project participants

1. How do you learn things?
2. How learning can address your wellbeing?
3. How does this project address your learning?
4. What do you learn with the help of this project?
5. How do you use different technology (ICT) in your everyday life?
6. How can these technologies (ICT) influence your learning opportunities?
7. How can these technologies help you to learn what you want to learn?
8. What resources do you need to learn through the technological means (e-learning) this project uses?
9. What do you find as the good sides of this technology supported learning (e-learning) this project uses?
10. What are the challenges you face in learning through this technological means (e-learning) this project uses?
11. How effective this technology supported learning (e-learning) is for your wellbeing?
12. How do you think local community can help you with technology supported learning (e-learning)?
13. How do you think technology supported learning (e-learning) could be more effective for you, if you think it would be effective at all?
14. Do you have anything related to share?

Appendix IX

List of questions to interview the project officials

1. What is your project about and how does it work?
2. How do you develop the content?
3. Who are the beneficiaries and how do they participate?
4. How is your project aiding e-learning for rural people?
5. What do your project beneficiaries need in terms of recourses to adopt e-learning?
6. What do they learn and what are the challenges they face?
7. How does this project address their learning and wellbeing?
8. How can they adopt e-learning more effectively?
9. How integrated is your project within the respective society?
10. How do you think the beneficiaries will respond when your project will come to an end?
11. What are the challenges you face and how to overcome those challenges?
12. How can your project work more effectively?
13. Do you have anything related to share which I probably should have asked?

Appendix X

List of questions to interview government officials, local opinion leaders, and members of knowledge communities

1. How do you think e-learning can address rural people's wellbeing?
2. What roles do the members of knowledge communities have in this regard? How do you think they should play their roles in this regard?
3. Who do you think should work on establishing e-learning as a means of learning for ordinary rural people in Bangladesh? How do you think it can be materialised?

Appendix XI

Participant Consent Form

Title of Research Project: **E-learning and wellbeing of those in Poverty in Bangladesh**

Name of Researcher: ABUREZA MOHAMMAD MUZAREBA

Participant Identification Number for this project: **Please tick in the boxes**

1. I confirm that I have read and understand the information sheet dated August 30, 2013, explaining the above research project and I have had the opportunity to ask questions about the project. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline. I can contact the researcher at his mobile 01713409403 for any inquiry. ☐

3. I understand that my responses will be kept strictly confidential. I give permission for the researcher to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. ☐

4. I understand that data provided by me will be secured that only the researcher can access and control; and upon request I will also enjoy same data access and data control privilege. ☐

5. I understand that if there is any audio recording of my conversation that will be deleted from all storage facilities when the PhD thesis will be finalised. ☐

6. I agree for contextual photos, demonstrating how and in which environment ICTs are being used, taken to be used in this and any future research. ☐

7. I agree for the data collected from me to be used in this and any future research. ☐

8. I agree to take part in the above research project. ☐

_____	_____	_____
Name of Participant (or legal representative)	Date	Signature
_____	_____	_____
Name of person taking consent (*if different from researcher*)	Date	Signature
_____	_____	_____
Researcher	Date	Signature

To be signed and dated in presence of the participant

To be signed and dated in presence of the participant

Appendix XII

Research Information Sheet

Title of Research Project:	**E-learning and wellbeing of those in poverty in Bangladesh**
Name of Researcher:	Abureza Mohammad Muzareba
Affiliation:	PhD Researcher, The University of Sheffield, UK
Date:	August 30, 2013

About My Research

This research will address how e-learning (learning through electronic medium like computer, mobile, radio and other electronic devices) contributes to empowering those who are in situations of poverty in Bangladesh, so that they can foster their individual and community wellbeing. Researcher will also try to understand how individuals can develop capabilities through e-learning, so that they become able to avail more options to meet their needs. How community might play its roles in this regard and what resources are required to empower community members in this way will also be explored. Researcher also aims to understand how e-learning approach can be made for the community, of the community and by the community, so that community members can benefit from it in their own ways. This research will look into how e-learning can help local community participate in knowledge building and knowledge sharing among themselves, and with knowledge communities like experts in the fields of agriculture, women's empowerment, and entrepreneurship development. The ultimate goal is to understand how e-learning can help learning and linking knowledge sources to individuals, especially those in situations of poverty, that might help them help themselves towards achieving empowerment and wellbeing.

Appendix XIII

Participant Consent Form in Bengali

সম্মতিপত্র

গবেষণার নামঃ ইলেক্ট্রনিক-শিক্ষণ এবং বাংলাদেশে দারিদ্রপীড়িত মানুষের ক্ষমতায়ন ও কল্যাণ
গবেষকের নামঃ আবুরেজা মুহাম্মাদ মুজারেবা
অংশগ্রণকারীর সনাক্তকারী নাম্বারঃ _____
সংশ্লিষ্ট বিবরণীতে সম্মতি প্রদানে উপযুক্ত বক্সে টিক চিহ্ন দিন।

এই সম্মতিপত্রটি যার জন্যঃ তথ্যপ্রদানকারী ☐ তথ্যপ্রদানকারীর (১৮ বছরের নীচে)অভিভাবক ☐
বন্ধনীর অভ্যন্তরীণ বিবরণী শুধুমাত্র ১৮ বছরের নীচের তথ্যপ্রদানকারীর অভিভাবকের জন্য প্রযোজ্য।

১. আমি নিশচিত করছি যে উপরে উল্লেখিত গবেষণার ব্যাখ্যায় নভেম্বার ০১, ২০১৩ এর তথ্যপত্রটি আমি পড়েছি এবং বুঝেছি। এ বিষয়ে প্রশ্ন করারও সুযোগ পেয়েছি।

২. আমি বুঝেছি যে আমার (আমার পোষ্যর) অংশগ্রহণ ইচ্ছামূলক এবং আমি (আমার পোষ্য) যে কোন সময়ে কোন কারণ দর্শানো বেতিরেকে এবং কোন প্রতিকূলতা না থাকলেও সংশ্লিষ্টতা/অংশগ্রহণ প্রত্যাহার করতে পারব। তদুপরি, কোন প্রশ্নের উত্তর চাইলে আমি (আমার পোষ্য) তা নাও দিতে পারি। যেকোন জিজ্ঞাসায় গবেষকের সাথে ০১৭১৩৪০৯৪০৩ নাম্বার এ যোগাযোগ করা যাবে।

৩. আমি বুঝেছি যে আমার দেয়া তথ্য কঠোর গোপনীয়তার সাথে সংরক্ষিত হবে। আমি গবষককে আমার (আমার পোষ্যর) দেয়া তথ্যের নামহীন ব্যাবহারের অনুমতি দিচ্ছি। আমি বুঝেছি যে গবেষণাসংক্রান্ত বিষয়ে আমার (আমার পোষ্যর) নাম উল্লেখিত থাকবেনা এবং এই গবেষণা কিংবা এর উপর লিখা কোন গবেষণা সংক্রান্ত লিখায় আমাকে (আমার পোষ্যকে) চিহ্নিত করা যাবেনা।

৪. আমি বুঝেছি যে আমার (আমার পোষ্যর) দেয়া তথ্য গোপনীয় থাকবে যা শুধু গবেষক এর নিয়ন্ত্রণেই থাকবে কিন্তূ গবেষকের নিকট অনুরোধ সাপেক্ষে আমিও (আমার পোষ্যও) নিজে আমার (তাহার) দেয়া তথ্যের উপর একই নিয়ন্ত্রণ ভোগ করবো।

৫. আমি বুঝেছি যে গবেষণার নথী চূড়ান্ত হবার পর আমার (আমার পোষ্যর) দেয়া তথ্যের কোন অডিও রেকর্ডিং থাকলে তা পরিপূর্ণভাবে মুছেফেলা হবে।

৬. আমি গবেষণা প্রেক্ষাপট সংশ্লিষ্ট ছবি এই গবেষণা এবং এই গবেষণা সংশ্লিষ্ট গবেষণা কাজে ব্যাবহারের সম্মতি প্রদান করছি।

৭. আমি আমার (আমার পোষ্যর) দেয়া তথ্য এই গবেষণা এবং এই গবেষণা সংশ্লিষ্ট গবেষণা কাজে ব্যাবহারের সম্মতি প্রদান করছি।

৮. আমি উপরে উল্লেখিত গবেষণায় (আমার পোষ্যর) অংশ গ্রহণে (পূর্ণসম্মতি জ্ঞাপন করছি) সম্মত আছি।

_____ _____
আংশগ্রণকারীর নাম তারিখ
স্বাক্ষর
(অভিভাবকের/আইনগত প্রতিনিধির)

_____ _____
সম্মতিগ্রহণকারীর নাম তারিখ
স্বাক্ষর
(গবেষক ছাড়া অন্য কেহ হইলে)
[আংশগ্রণকারীর উপস্থিতিতে স্বাক্ষর ও তারিখ দিতে হবে]

আবুরেজা মুহাম্মাদ মুজারেবা _____
গবেষকের নাম তারিখ
স্বাক্ষর

Appendix XIV

FGD Topic guide

Initial question to engage project participants in the discussion: how many of you use a mobile phone?

Topics to discuss

No	Detail	Note
1	Usual learning practices	
2	Learning-wellbeing relationships	
3	Project influence on their learning	
4	What they learn through it	
5	Meanings of ICT to them	
6	ICT in terms of learning opportunities	
7	Resource requirements	
8	Advantages of this project	
9	Disadvantages of this project	
10	Project effectiveness around wellbeing	
11	Roles of community	
12	How they want the e-learning	
13	Open comments	

Appendix XV

Characteristics of my case study design through the lenses of validity and reliability

Criteria	Usual case study tactic	Respective phase in the research	Measures taken in my research
Construct validity[298]	Using multiple sources of evidence	Data collection	Use interview, FGD, observation and project related documents
	Using chain of evidence	Data collection	Audio record, transcribe and translate data simultaneously within the data collection period
	Getting case report reviewed by key informants	Composition	Do not pursue this because respondents are not keen to review but are rather interested to know the final research findings and arguments.
Internal validity[299]	Matching patterns	Data analysis	Identify patterns within and across cases under specific themes
	Building explanations	Data analysis	Identify some interrelationships among issues and respective realities
	Conducting time series analysis	Data analysis	Do not conduct this to comply with my research design
	Establishing logic models	Data analysis	Do not conduct this because this research does not use time series data required for this.
External validity[300]	Using rival theories within single case	Research design	Do not use to comply with the nature of my research design
	Using replication logic in multiple case studies	Research design	Do not use replication logic in multiple cases.
Reliability	Using case study protocol	Data collection	Use same data collection procedures for each case and follow consistent sets of initial questions during interview and FGD sessions for each category of respondents
	Developing case study database	Data collection	Develop case study database which comprises transcripts of interview and FGD sessions, research diary and project related documents

Source: Adapted from Yin (1998) and modified reflecting on my research

[298] It implies finding appropriate approaches towards studying the concepts (Yin 2009)
[299] It implies establishing causal relationships based on interrelationships among data (Yin 2009)
[300] It implies locating the basis for generalisation of findings of the cases (Yin 2009)

Appendix XVI

District wise map of Bangladesh

Source: LGED (2015)