

**Effect of Information & Communication Technology in alleviating Poverty  
in Rural Bangladesh (Focused on Mobile phone)**

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**Submitted by:**

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**Dedicated...**

**To my parents who introduced me to the world of knowledge & developed my education foundation**

**And**

**To my friends who provided support during the course of the study.**

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## Abstract

Access to ICT has been cited as a factor for economic development. As such it is expected that mobile phone increase income & alleviate poverty. The intent of the present study is to evaluate the effect of mobile phone in enhancing income & social benefits of rural people & contribute reducing poverty. Two villages- Sirajabad & Pachabahela of Islampur Up-zila have been selected as a model study.

A total of 24(12 from each village) respondents who frequently visit tele-centre & use mobile phone were selected purposively for obtaining market related information, health service & education information. Owner of two tele-centres were interviewed for direct involvement with mobile business. Data also being collected from 12 villagers/ farmers who do not visit tele-centre having no access to ICT as control group. In connection with this study key informants were consulted to gather additional information & evidence. Besides, a few in-depth cases studies of the people who benefited using mobile phone at the tele-centers were conducted during the course of the data collection.

In the present study the effect of mobile phone as a means of common & comparatively easily available ICT device on poverty alleviation has been viewed in two ways- Economic benefit & social benefit. Mobile phone brings economic benefit to both service provider (PTC owner) & mobile phone users. Economic benefit to PTC owner has been termed as direct economic benefit because of their direct involvement. Economic benefit to mobile users has been termed as indirect economic benefit. Direct & indirect economic benefit measured on the basis of monthly income of both user & operator (owner).

Mobile phone offers non-income/social benefits such as Health, Education, Employment information, and communication with nearest one which reduces communication cost, health service cost & strengthens kinship bonding. Mobile phone communication can help significantly to expand access to this vital information for all segments of population & thus enhance pro-poor orientation of rural development activities.

In data analysis the study finds that the respondents use mobile phone for different purposes of- Market price information, Education information, Employment information, Health information, Exchange rate information, and contact with friends & family. Social motives top the list of purposes of the call made. Using mobile phone for the purpose of contact with friends & family dominate over other purposes. Using mobile for health purpose is not so attractive.

Poverty alleviation refers to increase in income. Mobile as a small business enterprise provides an opportunity for financial gain for mobile phone operator as well as users. To measure direct economic benefit the study analyzed average monthly income of the PTC owner. From the analysis, the study finds that mobile as an investment is profitable for the operator. There has been a substantial increase in income of those who operate PTC.

To assess the effect of access to mobile phone, the study compares the user income before & after using mobile phone & finds a significant growth in average monthly income. In the

assessment, the study also finds a significant relationship between access to mobile phone & monthly income.

The study conducted a control survey to validate income data. Comparing income of mobile user & non-user the study finds a significant difference between user & non-user income.

In order to measure the indirect economic benefit, the study analyzed the statement of getting better prices of commodities, getting free from middle-men influence, getting better employment information. In the analysis the study finds a positive correlation between access to mobile phone & the statements. The study also predicts more benefits in terms of access to mobile phone.

In the same way, to measure the social benefit, the study also analyzed the statement of getting benefits from health information, education information, strengthening social bondage in terms of access to mobile phone. In the analysis the study shows positive relationship between access to mobile phone & the statements. The study also predicts more social benefits in terms of access to mobile phones.

From the analysis, the findings of the study conclude that- the more access to mobile phone the more will be the socio economic benefits to the rural people. The findings establish that access to mobile phone may be one of the important ways for alleviation of rural poverty. The findings under different statement support the research hypothesis & results in- **“The more access to mobile phone the more will be the socio economic benefits to the rural people”** & access to mobile phone brings socio-economic benefit to the rural people.

The findings of the study leads to the conclusion- **First**, Pursuance of pragmatic policies that treat mobile phone not only as consumer good, but also as production goods; encouraging local tele-centre entrepreneurs, lowering transaction cost which bring rural people under umbrella of Digital Bangladesh. **Second**, the services through mobile phone are likely to deliver significant benefits to the poor. **Third**, Communication technology for the poor which requires to strengthen the deployment of information infrastructure to reach the poorest & remote areas.

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<b>List of Abbreviations</b>	
<b>ICT</b>	<b>Information &amp; Communication Technology</b>
<b>WB</b>	<b>World Bank</b>
<b>BBS</b>	<b>Bangladesh Bureau of Statistics</b>
<b>BDHS</b>	<b>Bangladesh Demographic &amp; Health Survey</b>
<b>NGO</b>	<b>Non-Government Organization</b>
<b>GB</b>	<b>Grameen Bank</b>
<b>SIDA</b>	<b>Swedish International Development Agency</b>
<b>MDG</b>	<b>Millennium Development Goal</b>
<b>OECD</b>	<b>Organization For Economic Co-operation &amp; Development</b>
<b>PTC</b>	<b>Private Tele-centre</b>
<b>VPP</b>	<b>Village Pay Phone</b>
<b>PK</b>	<b>Pallitathya Kendra</b>
<b>UNDP</b>	<b>United Nations Development Program</b>
<b>PRSP</b>	<b>Poverty Reduction Strategy Paper</b>
<b>BIDS</b>	<b>Bangladesh Institute of Development Studies</b>
<b>EC</b>	<b>European Commission</b>
<b>BTRC</b>	<b>Bangladesh Tele- Regulatory Commission</b>
<b>BTCL</b>	<b>Bangladesh Tele-Communication limited</b>
<b>LGRD</b>	<b>Local Government &amp; Rural Development</b>
<b>UP</b>	<b>Union Parishad</b>

# **Chapter 1: Introduction**

## 1.1. Background

Information and communication technology (ICTs) comprises of three separate words – information, communication and technology. Information is defined as any kind of message; written, audio, visual or audio-visual through which a person gets knowledge about a new person, place, thing, situation, or environment. Similarly, communication is the way of transferring such message to others which needs a medium, a clear message, and sender and receiver. Information & communication technology is the use of modern technology to aid the capture, processing, storage and retrieval, and communication of information, whether in the form of numerical data, text, sound, or image (Rahman, n.d., p. 1) and the ICTs infrastructures are defined as the devices which are used for communication and exchange of information. Therefore, both the ICTs and its associated infrastructures help in the creation and dissemination of knowledge. The system of communication is as old as human civilization and the means of communication has been changed over time and according to development in Science & Technology. In early days, Radio was the main device for communication and has been the fixed line telephone for a long time. However, the last two decades have been marked with tremendous development in the area of information and communication technologies and the traditional devices have been largely superseded by the wireless phone sets and the mobile phones. The advent of the later has enabled people to receive and send message as well as to communicate with others at any time, from anywhere without the nuisance of other communication provisions or accessories. The daily work turn-over of the governmental and the private postal services have been greatly shared by internet services – the latest breakthrough in the area of information & communication, and the short messaging services through mobile phony. Information and knowledge are critical components of poverty alleviation strategies, and ICTs offer the promise of easy access to huge amounts of information useful for the poor (Harris, 2002, p. 1). However, the access to information through ICT is not even, and almost all the countries of both developed and developing world are suffering from digital divide to a lesser or greater extent. The information and communication devices are easily affordable by the better-off population and therefore, they have firm grip over the economy due to greater access to the opportunities through enriched information available to them.

Moreover, developed nations have successfully reduced the information gap by bridging the digital divide which is still an emerging challenge in the developing countries.

In short, it can be said that the technological advancement in field of information & communication has made life easier though e-commerce, e-governance, e-medicine, e-education and several similar others. The traditional agrarian as well as industrial-based economy across the globe has shifted to knowledge-based economy and therefore, the importance of information is increasing day by day. The present nature, trend and pace of development around the globe has justified that countries having less information are one of the resource poor countries and so is true for the individuals who lack information. The vast majority of poor people lives in rural areas and derives their livelihoods directly or indirectly from agriculture and therefore, support for farming is a high priority for rural development (Harris, 2002, p. 26). Information and communication technologies can deliver useful information to farmers in the form of crop care and animal husbandry, fertilizer and feedstock inputs, drought mitigation, pest control, irrigation, weather forecasting, seed sourcing and market prices (ibid, p. 26). Keeping in view the indispensable contribution of information in addressing the poverty alleviation, the present research intends to study the impact of ICTs on reducing income poverty in rural Bangladesh with special reference to mobile phone.

## **1.2. ICT in Bangladesh**

The promise of ICT has become stronger with the passage of time & a future without ICT in any part of the world is unthinkable. As a part of this movement, more specifically due to the boom in ICT, Bangladesh is already connected to the outside world. Yet, our only success lies in mobile telecommunication, which has brought a huge change in telecommunication scenario of the country. In spite of such development there is still digital divide in the country. There is less penetration in rural area.

**Table 1.1 shows the availability of ICTs facilities in Bangladesh.**

<b>Type of facilities</b>	<b>National</b>	<b>Rural</b>	<b>Urban</b>
Telephone	2.87	0.33	10.36
Mobile phone	11.29	6.05	26.73
Computer	1.36	0.17	4.88
E-mail	0.20	-	0.81

(Source: BBS, Household Income & expenditure Survey, 2005)

**Table-1.2 shows the percentage of ICT facilities in 2007**

<b>Type of Ownership</b>	<b>Urban</b>	<b>Rural</b>
Mobile Phone	54.7	25.3
Non-Mobile	7	0.2

(Source: Bangladesh Demographic & health Survey, 2007)

Data table-1 shows digital gap between rural & urban people- only 0.33% rural people use telephone, 6.05% use mobile which is much less than urban. From the data it is inferred that rural people has less access to information. Table-2 shows mobile phone ownership in urban area is 54.7% while in rural area it is 25.3%. Mobile penetration in rural area is still much low compared to urban area.

There are six mobile operators in Bangladesh. The mobile operators' are- Grameen phone, Bangla link, Robi (Actel), City cell, Tele talk, Warid. For competitive environment mobile operators are expanding their business competitively which results in increase the number of subscribers. Total number of mobile subscriber in Bangladesh is 5.47 crore (source: The Daily Star, May10, 2010). But, as per mobile operators report, there is still less access to mobile phone in rural area. According to the Finance Minister's budget speech/2010, Bangladesh telecom penetration rate is around 38%, which means that 62% is still beyond reach of telecom services ( source: The Daily Star, June13, 2010). To ensure development digital divide to be minimized & universal access to ICT especially to mobile phone to be ensured. Universal access to ICT requires proper policy formulation & its implementation.

Information and Communication Technology (ICT) promote more efficient and cost effective government, facilitate more convenient government services and allow greater public access to information, and make government more accountable to citizens

The experience of the developed and emerging economies supports the above notion. To effectively harness the power of ICTs, Bangladesh formulated its first National ICT Policy in 2002. The National ICT Policy 2002 could not reach the professed levels of success due to lack of appropriate infrastructure plans to achieve the goals set in the policy.

While this ICT policy touched upon almost all facets of national life that could benefit from the use of ICTs, most of the time-bound goals and objectives are either past the time-frame mentioned in the policy document, or have already been achieved, or are no longer relevant due to other policy decisions of the Government. For example the ICT Policy 2002 envisioned a 'knowledge-based society' in the country by 2006 as a terminal goal. In a knowledge-based society 'knowledge' or 'information' is regarded as the most productive resource which makes people empowered in socio- economic field. Needless to say, there is some distance to go before that level of development in ICTs is achieved. In view of this, the ICT stakeholders felt the need to revise the current ICT Policy in line with the national goals, objectives and capabilities.

Under this backdrop revised ICT policy has been formulated in 2009. The objective of the policy is- ensure social equity, achieve higher productivity, achieve transparency, accountability, responsiveness, employment generation, health care, universal access, strengthening export. Environment, climate & disaster management. ICT is one of the most important tools to achieve economic development.

The policy emphasizes on social equity, higher productivity, health care, employment generation & universal access to ICT which are important factor for poverty for socio-economic development. Socio-economic development results in poverty alleviation. In this respect, the policy objective support poverty alleviation. The policy prepared an action plan to expand ICT network- Establish community e-centre in rural area, up-zila, Pourashova & Union

Parishad. Ministry of LGRD has taken initiative to establish e-centre in UP bhaban of the country.

The present study intends to examine the effect of mobile phone in enhancing income & social benefits to rural poor people & that will encourage govt. initiative to implement the policy.

### **1.3. Statement of the Problem**

Poverty is a relative term, and its type, nature and impact varies among countries and economies. Similarly, the ICTs mean for a number of information disseminating devices among which mobile telephone is relatively cheaper. Information and communication help both in economic and non-economic development which includes benefits such as improved law enforcement, reduced income inequality, more rapid and effective communications during disasters and stronger kinship bonding (Harris, 2002, p. 24). Amidst the various means of communication and information, and various intended use of ICTs by different classes of people, the broad perspective of this study is to find out the role of mobile telephone in reducing poverty level among the rural poor by investigating into how cellular phone helps the rural population in income generation.

### **1.4. Illustration of the Problem**

The national economy of Bangladesh is primarily based on agriculture and the agrarian population constitutes 84% of the total population who are directly or indirectly engaged in a wide range of agricultural activities (Rahman, 2004, p. 43). According the data available on World Bank web page, the urban population constituted 27% of the total population which means that 73% of the Bangladesh population lives in rural areas during 2007. Mahmud (2006) cited in Ashraf et al. (2008, p. 155) referring to a survey in 2000 maintains that 43.6% of the population of Bangladesh living below the poverty line. Similarly, about 20% of rural households live in extreme poverty while 29% of the rural population is considered moderately poor (The Daily Star, 11 November 2009). Besides, there is high skew ness in the income distribution among various populations in the country. Poverty strikes unevenly among village



groups and a large section of the population live in extreme poverty due to illiteracy, ill health, lack of access to basic services, powerlessness, social and physical isolation, vulnerability and unemployment (Rahman and Howlader, 2004 cited in Ashraf et al. 2009, p. 155). These data and facts imply that poverty in Bangladesh is pervasive in nature and one of its causes is the isolation of rural population which is, in turn, due to lack of socio-economic information to them. In Bangladesh, more than 50 million people use mobile while more than a million are using landline phones and 0.5 million people uses internet (The Daily Star, 21 October 2009) as a means of communication and information. According to Bangladesh Demographic & Health survey/2007, Mobile phone ownership at urban area is 54.7 & rural area is 25.3. Non-mobile ownership at urban area is 7.0 & rural area is 0.2.

From the data mentioned here, it is clear that there is digital divide which has created uneven distribution of information opportunity to the rural population. The lack of information has made most of the village people dependent upon middlemen of some sort for communication beyond the village border (Aminuzzaman et al., 2002, p. 1). Harris (2002, p. 15) maintains that the historical and cultural background with indigenous products adding value to the transaction for the customer may be deliberately disconnected by the middlemen in absence of information to the ethnic community and as a result, the ethnic artifacts lack the identity of the artists. The middlemen do so in order to keep down the prices at which they can obtain their benefit. Similarly, Bayes et al. (1999, p. 32) offer similar examples from Bangladesh perspective where women are bound to sell eggs to the middlemen at low prices due to lack of information to them. Another importance of information gap is the issue of “mistrust” in business transaction. Lack of information to any of the parties involved in certain business may lead to irruption of sense of suspicion and conflict, and the total business turn over might suffer seriously or even the partnerships among various partners may be broken out. This is to say that information to every people concerned in a community brings transparency which causes every individual to believe and therefore rely on each other, and the collaborative actions can be performed smoothly with great ease. For example, in Gujarat before the introduction of computerized milk collection centers, fat content of milk was used to be calculated hours after the milk was received and farmers were paid every 10 days. They had to trust the manual calculations of milk quality and quantity made by the staff of cooperatives

which often led to a situation of conflict between the staffs and the farmers who used to claim that the old system resulted in “malfeasance and underpayments” (World Bank, 2002 cited in Harris, 2002, p. 16).

Similarly, Bayes et al. (1999, p. 33) maintain about the “risky small-scale livestock rearing enterprise” of the poor villagers supported by the micro-credit programs of Grameen Bank and other non-governmental organizations in the area of their study. They claim that these enterprises are full of risk in the context of Bangladesh where livestock and poultry are subject to variety animal diseases, and the extension network for treating and preventing such diseases are very weak. Besides the aforementioned facts, the communication with one’s kith and kin working within the country but in remote area or abroad took months to disseminate family information. The workforce working abroad used to send cassettes recorded with their updates in the form of voices to their families – a way of one-way communication. Similarly, the law and order situation in the village areas is still miserable. This is due to the distant location of police office and similar other government settings for which immediate dissemination of information to these offices become difficult and more often get late. As a result, the criminal activities in the village areas either remain largely unnoticed or remain unsolved for a long time.

## **1.5. Scope of the Study**

The area of the intended study will be Sirajabad village (Pal Banda Union) and Pachabahela village (Islampur Union) under Islampur Upazila of Jamalpur district, Bangladesh. The region behind selecting these villages are – 1) agriculture-based economy of these villages and comparatively less penetration of mobile phone in general and ICTs in particular and 2) Less ICT facilities available in these villages. There are few PTCs in these villages which run their businesses only with the use of mobile phone communication services. There is lack of internet facilities, fax/facsimile and similar other means of information communication in these private call centers. The major objective of the present study is assessing the effect of mobile phones in poverty alleviation in these two villages with the following specific objectives. This study largely focused on the usefulness of mobile phones in

generating *direct cash income* to the rural people who are operating PTCs as small-scale business and *indirect income* to other portion of rural population in those villages who are just getting access to information services from the private tele centers.

### **1.6. Objectives of the Study**

- To ascertain how mobile phones can help enhancing income of the rural poor and contribute to reducing poverty.
- To find out other social benefits to the rural poor through the use of mobile phones.

### **1.7. Research Questions**

- How can mobile phones help enhancing income of the rural poor and contribute to reducing poverty?
- What are the other social benefits the rural poor get through mobile phones?

### **1.8. Research Hypothesis**

The present study hypothesizes that “The more the access to ICTs (mobile phone) the more will be the socio-economic benefits to the rural people”.

The dependent variable in this study is *poverty alleviation* and the independent variable is the *effect of mobile phones*; a means of information and communication.

### **1.9. Significance of the Study**

The proposed study finds its importance in establishing how development in information and communication technology leads to income generation among the rural poor. The analytical model sketched in the present study may be useful in justifying the extension of ICT sectors in the rural areas. Similarly, in Bangladesh, private sectors have initiated a revolutionary kind of movement in the telecommunication sector since the last decade. Therefore, the research findings of the present study may provide enough ground to the policy makers to encourage the private sectors for their reach in the interior parts of the country. It is also hoped that the result of the study would provoke the government for initiating public-

private partnerships to reach the village poor with mobile phone heavily subsidized so that the people with comparatively low income could have easy access to communication device. Additionally, the present study would add a new episode in the existing literature as it will focus the issue of rural people who establish small enterprise for livelihood without getting support of any state or non-state organizations.

### **1.10. Limitation of the study**

This proposed research will acknowledge the findings merely as a model study rather than to provide detailed information on various effects of mobile phones due to limitation of time and resources. A small sample of 24 respondents as mobile phone user has been chosen for the study due to time & resource constraints. The present study carried out only in two villages under one Upazila for which it is necessary to assess the implication of mobile phone in alleviating poverty by taking more number of villages from several districts in the country.

### **1.11. Operational Definition**

**Poverty:** SIDA defines Poverty as “lack of power, choice & material resources.” United Nation, MDGs & OECD guidelines define poverty as “Poverty is not just as a case of low income but also a lack of access to health care, schools & social security.” The World Bank defines poverty as powerlessness, voiceless, vulnerability & fear beyond income definition.

World Bank reports that the people living on less than \$1 a day belong to extreme poverty. People living on less than \$2 a day belong to basic poverty.

**Poverty alleviation:** Poverty alleviation refers to reduction of any of the negative aspects of poverty. The poor are often illiterate & have no assets like land, livestock or productive skills. Often they survive on uncertain wage labor. Therefore, major goal of poverty alleviation should be of building assets. Asset building can be done in many ways like connecting people to more accurate & up-to date information equipping them new skill & knowledge & connecting them to international market.

**ICT:** ICT is defined as electronic means of communication which process, store & disseminate information.

## **1.12. Organization Of the thesis**

The thesis presented in seven chapters-

**Chapter one – Introduction-** explain background of the study, ICT in Bangladesh, Statement & illustration of the research problem. It specifies research objectives, hypothesis & limitation. It also explains scope & significance of the study.

**Chapter two – Literature Review-** explains literature relevant to the study.

**Chapter three - Conceptual & analytical framework-** explains relationship between dependant & independent variables. It also defines different indicators relating to variables.

**Chapter four - Methodology-** discusses the methods & techniques applied for data collection & analysis.

**Chapter five - Analysis & Findings-** this chapter represents arrange & analyse the data. This chapter also provides findings from the analysis.

**Chapter six - Test of hypothesis-** This chapter discusses summary findings, relationship between findings & different statement. This chapter makes inference on research hypothesis on the basis of findings.

**Chapter seven - conclusion & policy implications-** This chapter discusses conclusion on the basis of findings & provides future implications of the study.

## **Chapter 2: Literature Review**

The present world is largely applying knowledge-based economy which has been possible with a miracle development in the field of information and communication technology, and with the establishment of World Trade Organization which has triggered the sense of competition among countries in the field of economy, trade, intellectual property protection, foreign direct investment, technological transfers and so forth. These developments have been possible with the help of widespread connectivity and exchange of information among nations. The ICT devices are available among us in various forms. Many people understand ICTs as the computer and the internet connection. Radio and telephony have a long history demonstrating their utility in developing countries (Kenny, 2002, p. 141). The computers and the internet are comparatively new technological advancement in the field of ICTs which can not be affordable by majority of the rural people in the developing world. Similarly, the fixed phone lines provided by the government carry procedural complexity, limitation in distribution and comparatively costlier than mobile telephony. There are numerous researches on the usefulness of mobile telephony in improving the livelihood of human through poverty reduction, improving in the situation of law and order, encouraging participation of people in decision-making and development process (good governance), and strengthening bondage among kith and kin. In short, information technology has a great impact on the societies ranging from employment, poverty alleviation, education and training, commerce, at home, arts (music, animation and visual effects, writing, games) to all aspects of public administration and national defense (Rahman, n.d., p. 1). Besides, its impact can be realized on agricultural productivity by the selection of appropriate inputs, increased income by finding appropriate market for transaction and by directly operating private tele centers (PTCs) which leads to poverty reduction, and empowerment of the people.

There are only few researches on the usefulness of mobile telephone in poverty reduction among rural population in the context of Bangladesh. While Aminuzzaman et al. (2002) and Bayes et al. (1999) have conducted their studies on empowerment and poverty reduction through *Village Pay Phone* (VPP) scheme of Grameen Bank, the village-based micro-finance organization respectively; the research of Rahman (2008) has focused on the role of *Pallitathya Kendra* (Sustainable Rural Livelihood Information Network) in poverty

reduction. [Aminuzzaman et al. \(2002, p. 6\)](#) have carried out their study in 20 different locations of their project area found positive impacts of VPP in most areas that were studied. According to them, the most pronounced impacts of VPP were found with regard to a general reduction of transaction costs and uncertainty (reduced need for travel, quicker access to information, and more choice) and in reducing the isolation of many villages ([Aminuzzaman et al., 2002, p. 26](#)). They have further explored that, for women the VPP was an important channel for family contacts and communications, especially with husbands living abroad as migrant workers; otherwise, the VPP has had little impact on gender relations ([ibid](#)). Therefore, their study has focused on the usefulness of the mobile phones in the project area of VPP of Grameen Bank. Similarly, [Bayes et al. \(1999\)](#) have also worked with the mobile phone (VPP) of Grameen Bank. Their areas of study are the villages under Narayngonj district which is located 40 km of the capital city, Dhaka ([Bayes et al., 1999, p. 36](#)). They have shown that the “net profit” from mobile-based (VPP) business have increased to the persons carrying out their business through mobile calls ([Bayes, 1999, p. 26](#)). Besides, the people getting services from the VPP tele-centers have been greatly benefited through getting “indirect benefits” from VPPs in the form of information on employment and education, price of their agricultural products and thereby search appropriate market, proper exchange rate and getting rid of middlemen, and so forth. In both of the cases, VPP model of GB has been taken into account for the study. Also, both the studies have been carried out some more than a decade ago. Presently, GB has no provision for VPP and the village people are installing their businesses in the form of communication centers. They establish PTC as a small enterprise by investing their own money or they go for loan from the banks in their localities. The communication centers managed by individuals have only mobile phones as the means of communication. There is no provision of fixed telephones as well as computer and internet, and the PTC model is nowadays gaining importance in rural areas. In this way, there is no influence of any organization or any public or private funded projects in villages for encouraging people to purchase mobile phone.

The study of [Rahman \(2008\)](#) is recent one and he has carried out the role of ICTs in reduction of rural poverty. His study has focused on the community-managed information center; the Pallitathya Kendra (Village Information Center) which are managed by national level non-governmental organizations. These Pallitathya Kendra are common access points in



the communities which are equipped with different ICTs facilities like computer, mobile phone, internet connection and so on to ensure access to information for the rural people (Rahman, 2008, p. 44). The area of his study is Babrijhar village under Chapra Sharomjani union, Sadar Upazilla of Nilphamari district of Bangladesh (Rahman, 2008, p. 23). As the Pallitathya Kendra has been managed by communities through NGOs, Rahman could not establish income gain through the Kendra to any specific individual. He has qualified the importance of ICTs in rural poverty reduction and has drawn the conclusions for the extension and sustainability of such Kendra for the betterment of village people. In short, he has come up with policy recommendation that the non-state sectors (NGOs) need to extend their activities in villages in the field of information and communication.

Grameen Bank initiated VPP model beginning with just 50 village phone subscribers in 1997 (Aminuzzaman et al., 2002, p. 1). At that time, the rural telecom market in Bangladesh could be said to be almost non-existent and about 90% of Bangladesh's villages lacked any access to a phone (ibid). With the gradual development in course of over more than a decade, many of the private businesses have come up with their mobile services in the country and nowadays GB has phased out VPP project (Personal communication with GB Office, Nawabgonj, Dhaka; dated 15 November 2009). Nowadays, rural people establish their individual micro-enterprises in the form of PTC without depending on any public or private organizations – an entirely new scenario in comparison to what existed in the past as with the case of VPP project. Therefore, the present proposal finds an interesting opportunity to study the effect of mobile phones by taking into consideration the case of independently-managed PTC in rural Bangladesh.

# **Chapter 3: Conceptual & Analytical Framework**

### 3.1. Introduction

The central objective of this chapter is to develop a framework for analysis. This chapter divided into two parts. In the first part concepts & relevant theories have been discussed. Part two contains analytical framework of the study.

### 3.2. Concepts & relevant theories

Poverty is a relative terminology and it has multifaceted dimensions. Various institutions define it variously and also it is perceived in different ways. The World Bank (WB) reports that the population of people living on less than \$1 a day (*extreme income poverty*) constitutes 1.2 billion (one fifth of the total 6 billion world's population) and those living on less than US\$ 2 a day constitute 2.8 billion – almost half of the population (Harris, 2002: p. 12). However, WB report also covers other aspects in defining poverty and includes – powerlessness, voiceless ness, vulnerability, and fear (ibid). Similarly, poverty should not be defined merely as a lack of income and financial resources. It should also include the deprivation of basic capabilities and the lack of access to education, health, natural resources, employment, land and credit, political participation, and services and infrastructure (European Commission, 2001 cited in Harris, 2002: p. 21).

In the context of Bangladesh, poverty has been perceived in terms of income and calorie intake (Nutrition poverty) by the population. Therefore, income (consumption) differentials between the poor and the poorest constitute an important aspect of the poverty reality in Bangladesh (UNDP, n.d., p. 5). United Nations Development Programme notes that the poor living in extreme poverty are defined as the population living below 1800 kcal as per the direct calorie measure (ibid).

Most of the governments of developing world are serious regarding poverty alleviation through income generation Programme, safety net Programme for the ultra poor and so on. Accordingly, they have formulated various plan and policies and have launched various kinds

of Programme to achieve the targets set as per PRSP and the Millennium Development Goals in recent years. Even the intergovernmental institutes are funding such Programme to these countries and they have also their goal for poverty reduction. For example, International Development Agencies have set goals to reducing the proportion of people living in extreme income poverty i.e. less than \$1 a day by half by 2015 (Harris, 2002, p. 12). Similarly, it is well known fact that WB have been working in most of the developing countries for the construction of basic developmental infrastructure under which poor are ensured with food and nutrition – a Programme known as *Food for Work Programme*. Therefore, it is quite apparent from the aforementioned literatures that both the national as well as international governments have largely focused on income poverty. But such programs largely overlook the assurance of benefits to the target population. Therefore, there remains a gap what this proposal identifies as information and communication for which majority of rural people are deprived of. In the same line, ZEF (2002) cited in Harris (2002, p. 12) opines that poverty should be seen as being deprivation of the information to the population for which they are escaped from participation in the wider society, at the local, national or global level. The proposition made by ZEF (2002) is justifiable through the observation of Stiglitz (2000) who argues that perhaps the most important break with the past – one that leaves open huge areas for future work – lies in the economics of information (Stiglitz, 2000, p. 1441). His argument indicates that over recent years, the interest in better understanding the economics of information has grown (World Bank, 1998/99; Hitt and Brynjolfsson, 1996; Stiglitz, 1985; Stiglitz and Weiss 1981 cited in Bayes et al., 1999, p. 3).

Information economy is a term that characterizes an economy with an increased emphasis on informational activities & information industry.

Economy in which knowledge is the primary raw material & source of value. It is characterized by-

- 1) Convergence & integration of communication, data processing technologies into information technology.

2) Pervasive influence of IT on economic activity such that most workers are information workers & most products is information products.

3) Application of IT networks throughout the economic institutions & processes resulting in very high degree flexibility, weakening of regulatory control & acceleration of globalization. (Source: Business dictionary)

From the above description ICT has impact on development regarding pervasive influence of IT on economic activity. Kenny (2002) Flor (2001) and Marker et al (2002) argue that ICT is powerful tool for employment & income generation as well as for increasing access to education & other social services. As an example mobile phone usage among fishers in Kerala has been shown benefit to both producers & consumers through improved information & better functioning market while mobile telephones have been found to assist business in the informal economy by helping them to attract additional business (Vaa Dijk & Hacker 2003; Jensen 2007). Other studies go further to point out that the role of ICT is not only limited to promoting growth but also includes non-income dimensions of development such as empowerment & security (Gerster & Zimmenmann 2003).

In the present study, the effect of mobile phone as a means of common and comparatively easily available ICTs device on poverty alleviation has been viewed in two ways – 1) *Direct Income*: It is simply understood as direct cash income to the rural people from mobile-phone communication micro-enterprise (PTC) run at their own investment. The entrepreneurs provide communication services to the villagers who, in turn, pay money to them; PTC operators transfer the balances to the mobile holders through a system of *flexi load* for which they get certain amount of money in the form of commission from the respective mobile company or they sell the *Recharge Card* from which they get in-built kind of monetary incentives. In this way, the PTC operators get employment through which they earn money besides performing their homely works. 2) *Indirect Income*: The proposal understands it as the extra income earned by the rural farmers with the use of mobile phones. The availability of mobile phones in rural areas facilitates the process of dissemination of information and communication which enables the rural people to gain easy access to formal or informal kind

of market information system. The comparatively expanded knowledge regarding the appropriate market for purchase of quality inputs at the possibly minimal price and the market for selling their output at possibly highest price lead the rural people to fetch increased cash benefits. For example, suppose, a farmer sells 100 Kg of cauliflower in the local market @ Tk. 20/Kg with gross income Tk. 2000 (Tk, 20 x 100 Kg = Tk. 2000). Now suppose, he has the means of mobile communication to know the market price of cauliflower from his kith and kin or any known person located at some 20Km distant from his village and he comes to know the price of cauliflower @ Tk. 30/Kg. As a matter of fact, he would go to that market where his gross income after selling 100Kg cauliflower will be Tk. 3000 (Tk. 30 x 100 Kg = Tk. 3000). Therefore, his gross income increases by Tk. 1000 due to his access to information and communication. Here, however it is pertinent to ask whether the raised gross income to the farmer was due to mobile phone communication? If not, what are the factors and how are they responsible for improving information and communication? How does mobile phone help the rural people to reap socio-economic benefit? Whether information available to rural poor can make them get rid of poverty?

In agriculture product market, middle-men dominate the supply chain as major price settlers. Small farmers are often unaware of how prices are set & end up taking whatever prices they are offered. When market price information is available to them, middle-men unable to exploit the price disparities that exist between major & minor markets.

Private tele-centre offers an opportunity to make useful information more widely available. This could help agricultural market operate more efficiently. Small scale producers, who make up vast majority of Bangladesh farmers are often unable to do such that could increase yields and lead to better prices for their products. Mobile allows farmers to know timely price information and decide best place to sell their products.

Agricultural products are both seasonal and perishable. Information about supply and demand is critical for determination of market prices and for traders bargaining power. Information travels from rural market to urban market through middle –men which are very

much traditional and time consuming. But supply, demand situation change quickly. Exchange of information on prices, supply & demand situation is the most utility of mobile phones.

Health service is the basic need of the people. People of rural Bangladesh are still away from the primary health care service. Providing health care to the rural poor people is dire demand of the day. Improving poor people health care is one of the most promising areas for poverty alleviation with ICT. ICT can be applied in many ways to achieve desirable health care. ICT is used in developing countries to facilitate remote consultation and treatment. Public broadcast media such as radio & television have a long history of facilitating the dissemination of public health messages which creates awareness among mass people. For emergency case mobile operators of Bangladesh- GP, Aktel and Bangla link have come forward to provide primary health care service through doctors. Any patient with the help of mobile at PTC can contact with the doctor & can take doctors prescription at the cost of a call rate. ICT creates a tremendous opportunity to the rural poor providing health care.

Employment problem is one of the major problems in rural Bangladesh. Lack of information people in rural areas remain in dark about job facility. Daily newspaper is the source of major job advertisement, but Newspaper is still unreachable to rural people. ICT turned the people to the window of job information. Two areas of employment opportunity arise from the deployment of ICT centre. First, Unemployed people can be employed by generating income. Second, Unemployed people can be employed getting information through ICT.

Information & communication infrastructures are the means which can improve communication and smooth flow of information among people or across the societies; they cannot be the main cause of economic, societal or even other kinds of benefits to an individual or society. This proposition can be simply argued on the ground that *electricity* or the *dry cell batteries* are the least requirements for charging the mobiles. For mapping the gross income to the farmer in our question, the contribution of *agricultural roads*, *transportation facility*, and *cold storage* and so on becomes important. Also [World Bank \(2006, p. 2\)](#) maintains that improved roads and infrastructure can create opportunities for economic growth and poverty

reduction through a range of mechanisms, and telecommunications infrastructure remains only as a subset of the above infrastructures (Bayes et al., 1999, p. 3). Later in response to replying – what factors are involved in improving information and its availability so that people from every segment of society can easily benefit from economics of information? – maintain that a large role is played by infrastructure (e.g. roads, transport, postal and telecom services, etc.); the development of which helps to decrease the distance between economic agents, increase the productivity of inputs and signal proper prices for commodities, and through other means exerts a positive influence on overall economic growth (ibid). Roads reduce transportation costs and the costs of consumption, and production of goods and services (BIDS, 2004 cited in World Bank, 2006, p.2). With easier access to markets and technology, improved roads expand farm and non-farm production through increased availability of relevant inputs and lower input costs (Binswanger, Khandker, and Rosenzweig 1993; BIDS 2004; Levy 1996 cited in World Bank, 2006, p. 2) as well as growth in rural enterprises (Lokshin and Yemtsov 2005 cited in World Bank, 2006, p. 2). In spite of great contribution of infrastructures like roads and similar others, (World Bank, 2006, p. 3) maintains that it has been difficult to precisely quantify the benefits of roads due to methodological constraints and data limitations.

In the literature, it is argued that telecom provides access to applications of modern technology in many sectors and is the key to the economy's ability to adjust the structure of demand and supply in response to changing price signals (Kessides 1993 cited in Bayes et al., 1999, p. 3). Some studies (Kamal, 1983; Sunders et.al, 1983; Alfian et.al, 1984 cited in Bayes et al., 1999, p. 3) deal with the impact of telecom in rural areas, but fail to address the issue of how the increased availability of phones affects people of different income strata, poverty reduction and social development. This may be true in the sense as opined by Bayes et al. (1999, p. 4) that some of the basic questions concerning the nexus between telecom and the socio-economic development of rural people (particularly the poor), for example whether telephones are of any use to the rural poor in particular; whether telephones represent a consumer good, a production good or both, and whether the distribution of the benefits of telephone services is equitable and, if not, how it may be improved. Finally, the present study remarks that poverty is a complex issue to understand and rather the most complex issue is investigating which factors or which infrastructure plays pivotal role in alleviating poverty in

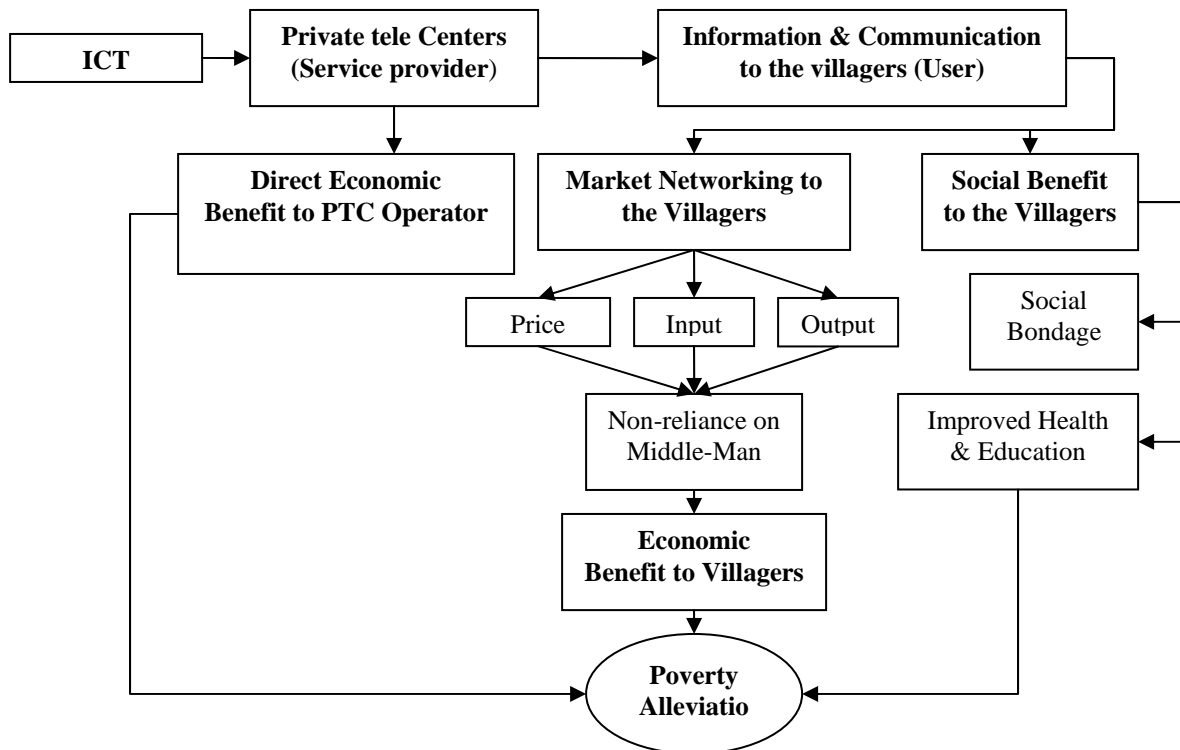


rural areas. The proposal therefore, arrives on the conclusion that each and every kind of infrastructure has complementary effect in reducing poverty and the effect of one infrastructure or technology should be studied in area, population and situation specific context assuming that the more access of rural people to various kinds of infrastructures and technologies leads to poverty reduction which should be studied as an interaction of a large number of factors. Based on the aforementioned literatures and various propositions of various institutions as well as scholars, the present study shall use the following analytical framework.

### 3.3. Analytical Framework

On the basis of the above discussion the study used the following analytical framework.

(Diagram-3.1)



In the present analytical framework, the effect of various intervening variables will be measured using the indicators shown in the table below:

<b>Variables</b>	<b>Intervening Variables</b>	<b>Measuring Indicators</b>	<b>Remarks</b>
Independent Variables: Effect of Mobile Phones	1. Direct Economic Benefit to PTC Operators/owner	Cash in hand generated through PTC (call services, flexi-load, selling recharge cards).	Daily phone call register maintained by the PTCs operators
	2. Market Networking to the Villagers (Information on market price of various inputs and outputs)	Information on <ul style="list-style-type: none"> <li>• employment,</li> <li>• price of their agricultural products,</li> <li>• proper exchange rate, and</li> <li>• getting rid of middlemen</li> </ul>	These indicators show the indirect monetary benefits to the rural people who receive communication services from the PTC.
	3. Social Benefit to the villagers	<ul style="list-style-type: none"> <li>• Information on education</li> <li>• Information on health</li> <li>• Frequent communication with kith and kin with ease</li> </ul>	

Private tele-centre operates through mobile phone & provides services to the user. Tele-centre operator/owner earns through selling services (selling calls) to the user. The tele-centre also earn by selling recharge cards, flexi load. Income through these sources termed as direct income.

Mobile phone user gets facility to use mobile phone at tele-centre. Mobile at tele-centre offers the opportunity of access to information like employment, prices of Agri-products,

exchange rate etc. Access to information increases the bargaining & negotiation power of the user & gets better prices of commodities.

Traditionally rural poor people are dependent on middle-men to sell their products. Middle-men take the opportunity of more profit for their dependency. Middle-men hide the original prices of commodities & deprive the rural poor producer. Access to mobile phone provides the actual prices of commodities. Such information helps the rural people freed from influence of middle-men & ensures better prices of commodities. From the discussion it is clear that more access to information provide better prices of commodities which contribute to raise income.

Daily News paper is the source of employment information. Rural people usually are not in touch of daily news paper. So, they remain in dark about such information & remain unemployed. But mobile phone provides employment information which is easy access. Getting such information one can be employed which make one self reliant & raise ones income. Here, it can be said that more access to mobile phone ensure more employment information which facilitates one to be employed & raise ones income.

Mobile phone provides information on education, health service & facilitates to communicate with nearest one. Communication with nearest one ensures social bondage. Access to information provides better education & better health service which increase the productivity of rural people. Better productivity ensures better earnings which results raise in income.

### **3.4. Conclusion**

This chapter prepared the theoretical framework for the analysis of the study. The variables which affect the poverty alleviation described here. The indicators corresponding to the intervening variables discussed in this chapter. Therefore, the variables & indicators discussed above measure the effect of mobile phone in poverty alleviation.

## **Chapter 4: Methodology**

A research needs methodology which reveals that how the researcher is going to achieve his/her objectives of the stipulated study. According to Kothari (2004, p. 8), research methodology is a way to solve the research problem systematically and it may be understood a science of studying how research is done scientifically. He further adds that we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them.

#### **4.1. Method**

Research methods are simply understood as all those methods or techniques that are used for conducting a research. Research methods or techniques refer to the methods the researchers use in performing research operations (Kothari, 2004, p. 7-8). He explains, in other words, all those methods which are used by the researcher during the course of studying his research problem are termed as research methods. In Social Science research, there is controversy regarding the use of either qualitative or quantitative method as many literatures point out. However, scholars use one of them or the combination of them what is known as mixed type research approach.

The intent of present study requires using a mixed approach of qualitative and quantitative method. The research problems stressed in this proposal is of two categories; inquiry of direct income generation to the rural people through PTC and the inquiry regarding the role of information and communication provided through PTC to the rural people who are benefited in terms of income generation which is rather an indirect approach. The research problem also stressed on inquiry about social benefits provided through PTC regarding health & education information. Keeping in view of these broad objectives of the study, a quantitative approach has been used to show the correlation between information and direct poverty alleviation. The specific data quantified during field study. The information regarding non- income/social benefits also analyzed showing correlation coefficient. In some cases the information regarding the role of ICTs in reducing poverty is rather a matter of obscure understanding and therefore, the present proposal used the qualitative approach to describe the

events rather than to quantify them. This is due to the fact that the obscure things are very difficult to quantify.

## 4.2. Sources of data

The present study has been conducted based on both primary and secondary sources of data and case study.

**Primary data-** The primary data gathered from the sampled two private tele centers and 24 villagers/farmers who frequently visit tele centers and use mobile telephone for obtaining market related information, health service & education information. Data also being collected from 12 villagers/ farmers who do not visited tele- centre having no access to ICT as control group. A structured questionnaire framed with a view to gather information from the target respondents. In connection with this research, key informants (who are not the direct beneficiaries of the PTC but are aware of people who benefited around them) were consulted to gather additional information and evidence. Besides, a few in-depth cases studies of the people who benefited socially from the call centers were conducted during the course of the data collection. These specific cases chosen in consultation with the key informants and other rural noted persons, collected and studied in depth. A study was carried out involving the PTC users who are the beneficiaries of the tele- centers through survey method.

The area of the intended study was Sirajabad village (Pal Banda Union) and Pachabahela village (Islampur Union) under Islampur Upazila of Jamalpur district, Bangladesh. Control area of the study is Kandarchar under Islampur Upzila of Jamalpur district.

**Secondary data:** For secondary data I mainly studied related literature & journal with statistical information.

## 4.3. Data Collection Technique

The whereabouts of PTC studied through case study approach. Altogether 24 villagers/farmers who frequently visit tele- centers and use mobile telephone for obtaining

market related information were carefully selected on the basis of their use of mobile communication exclusively for the purpose of agricultural activities. They were approached with a questionnaire format as a means of survey method. Similarly, several case studies were carried out in the study area to qualitatively evaluate the impact of mobile phone on improvement of social bondage, and on health and education.

Questionnaire developed focusing three groups- Mobile users/ non users at tele-centre, tele- centre operator & key informants. The questionnaire item consists of questions on mobile phone usage in relation to income poverty aspects. The Questionnaire is in English/Bengali. The Questionnaire filled by the interviewer & necessary assistance was provided to the respondents. There are two types of questions- closed ended questions & open ended questions.

**Purposive sampling technique applied to select the sample.**

#### **4.4. Validation of the data**

The validation of data, a small survey conducted in the area having no tele centre. For this purpose, a control study conducted selecting twelve respondents who have no access to ICT. Cross-checking of the data has been made through data collected from control study.

#### **4.5. Data Processing and Analysis Plan**

Simple arithmetic calculation used for the Profit analysis of tele-centre operator and the tools of descriptive statistics (Correlation and regression Techniques) used for analyzing the data obtained from the respondents. Key informants statement analyzed in the light of mobile phone benefits. Test of significance used to make inference on income difference as well as effect of mobile phone on income generation.

#### **4.6. Limitation & challenges**

During the field study I experienced some new & exciting things during the field study which explained below:

- 1) **Fear of disclosing information:** Actually rural people are very simple & easy. They are not ready to answer the entire question properly thrown to them. Respondents did not answer easily regarding Income, Age.
- 2) **Reluctance in providing information:** Rural people are not so conscious about countries development issue. So, they are not ready to meet any survey question regarding development related study. Beside this, they feel comfort to be busy with their works.
- 3) **Limited time:** Limited time is another constraint in the field work. The time given for data collection was too short. For social science study, researcher needs more time for in-depth data collection. To structure the design in the light of development extra time is essential. Personally I feel, if I had more time it would help me to get more reliable data.

#### **4.7. Summary**

In this chapter methodology is discussed pursuing the research question. The data collected on the basis of open & closed ended questionnaire. Carrying out research is challenging task. It requires strategies & tactics to overcome challenges in the field. These include good contacts, friendly behavior, use local language.



## **Chapter5: Analysis & findings**

## 5.1. Personal profile of the respondents (Mobile phone users)

### 5.1.1. Sex & Age structure of the respondents

Regarding personal profile, general information is asked to the respondents to identify the sex & age group that used mobile phone at Tele-center.

Under this study, 24 respondents were selected purposively who visit the tele-centre frequently to use mobile phone for in-depth interview. Among them most of the respondents 50% belong to the age group 31-40 & they are relatively young. In the study we also find that majority of the respondents 83.3% are male who visit tele-centre to use mobile phone. Female participation in using mobile phone at tele-centre is very few which accounts for only 16.7%. Age & Gender detail described in table- below.

**Table 5.1-Gender Structure**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Male	20	83.3
Female	4	16.7
Total	24	100.0

**Table 5.2-Age Structure**

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
21-30	2	8.3
31-40	12	50.0
41-50	5	20.8
51-60	5	20.8
Total	24	100.0

### 5.1.2. Marital Status of the respondents

General information of marital status is asked to identify its participation in using mobile phone at tele-centre. Out of total respondents 87.5% are married. Here it is found that majority of the respondents who visit tele-centre to use mobile phone are married.

**Table 5.3- Marital status**

<b>Marital status</b>	<b>Frequency</b>	<b>Percent</b>
Married	21	87.5
Single	3	12.5
Total	24	100.0

### 5.1.3. Education Status of the respondents

Education is an important factor of personal profile. General information of education level is asked to identify its participation in using mobile phone and to compare the education level of mobile users to national literacy rate.

In the study it is found that Most of the respondents (50%) are illiterate. Adult literacy rate of Bangladesh is 48.8% (source: BBS 2008) which means that 51.2% people are illiterate. Here, mobile users' illiteracy rate is lower than national level figure. Language loop of mobile phone is more or less difficult to understand for illiterate people. This is another reason for using mobile at tele-centre following poverty. Out of total respondents only 16.7% respondents have SSC level education that use mobile phone at tele-centre. Education status of the respondents is given in the table below in detail.

**Table 5.4 -Education status**

<b>Education level</b>	<b>Frequency</b>	<b>Percent</b>
0	12	50.0
5	3	12.5
8	3	12.5
9	1	4.2
10	4	16.7
12	1	4.2
Total	24	100.0

0= No Literacy, 5= Class Five, 8= Class Eight, 9= Class Nine, 10= SSC, 12= HSC

**5.1.4. Occupational Status of the respondents**

It is found that mobile phone users are from different occupations. Agricultural occupations are strongly represented which accounts for 58.3%. Main occupation of the rural people is agriculture supported by the study. While students are under represented accounted for 4.2%.

In terms of communication needs business professions are second dominant which represent 20.8%. The details of occupational status are given in table- below.

**Table 5.5 - Occupational status**

<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Agriculture	14	58.3
Business	5	20.8
Student	1	4.2
Housewife	2	8.3
Others	2	8.3
Total	24	100.0

## 5.2. Access to mobile phone

The study intended to find out users access to mobile phone. In the study, it is found that users visited tele-centre to use mobile phone more than once per month. The study finds that most of the respondents (20.8%) use mobile phone 4 times/ month for the purpose their interest. 12.5 % use mobile phone 10 times/ month which means that users of this group visit tele-centre more than twice a week. Details of visiting time of the respondents are given in table below.

**Table 5.6- Visiting Tele-centre to use mobile**

Visiting time	Frequency	Percent
3	1	4.2
4	5	20.8
5	4	16.7
6	2	8.3
7	2	8.3
8	3	12.5
10	3	12.5
12	2	8.3
15	1	4.2
16	1	4.2
Total	24	100.0

## 5.3. Purpose of using mobile phone

It is difficult to identify the purpose of the phone call. A call is made for a single purpose is rare. In keeping with this approach, purposes are categorized into several groups- Market price information, Education information, Employment information, Health information, Exchange rate information, contact with friends & family.

The respondents use mobile phone for multiple purposes of interest. So multiple responses came from single respondent. Social motives top the list of purposes of the call made. Using mobile phone for the purpose of contact with friends & family dominate over other purposes which account for 70.9%. Within these groups the respondents use mobile phone for market price information which account for 54.2%. The respondents accounted for health purpose call is more or less 41.7%. The detail purpose of using mobile phone is given in table below.

**Table5.7-Purpose of using mobile phone**

<b>Purpose</b>	<b>Frequency</b>	<b>Percent</b>
Market price information	13	54.2
Education information	3	12.5
Contact with friends & family	17	70.9
Employment information	2	8.3
Health information	10	41.7
Exchange rate	4	16.7
Total	-	-

Note: multiple purpose response, frequency percentage exceeds 100%

## **5.4. Economic Benefit**

Mobile phone brings economic benefit to both PTC owners (Operator) and mobile phone users. Here the study discusses direct economic benefit to PTC operator/owner & indirect economic benefit to mobile phone users. Direct & Indirect economic benefit is measured on the basis of monthly income.

### **5.4.1. Income Analysis of PTC owner:**

Poverty alleviation refers to increase in income. Mobile as a small business enterprise provides an opportunity for financial gain for mobile phone operator as well as users. Mobile as an investment has been found to be profitable for the operator.

On the other hand, income of the PTC-1 owner increased to 140% & PTC-2 owner increased to 137%. There has been a substantial increase in income of those who operate PTC.

There are different sources of Income in a tele-centre. Source-wise tele-centre income is given in the table below.

**Table 5.8- Monthly Income**

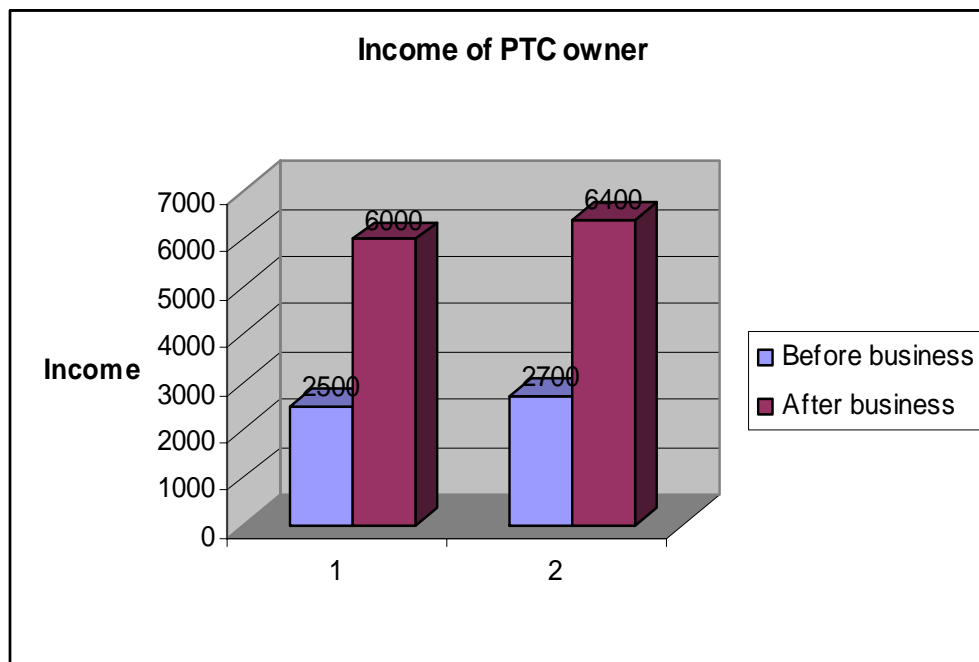
Source of Income	Monthly Income (Taka)	
	PTC-1	PTC-2
Card Sale	800	700
Flexi load	2200	2500
Call Sale	500	500
Total	3500	3700

Monthly Income of the tele-centre owner before operation of tele-centre & after operation of tele-centre given in the table below.

**Table 5.9- Change in Income**

Tele-centre	Monthly Income (Taka)		Income increase (%)
	Before business	After business	
Tele-centre-1	2500	6000	140
Tele-centre-2	2700	6400	137

**Diagram 5.1- shows income of PTC owner**



### **Opinion of the PTC owner:**

One of the tele-centre owner opined that before the ownership he was unemployed. He started the business three years ago by short amount of investment. Now he is self reliant & leads the life with prestige & honor. He dreams of expanding the business to establish information kiosks which will provide different service like internet. He stated about some limitation of technical efficiency, lack of public awareness regarding services of mobile phone. He also stated, Mobile operators publicity regarding services of health, education etc. are totally absent in rural area. Another owner opined that he operated small electronics business before starting the tele-centre business. Tele-centre business added extra income. Now he is more solvent financially. He opined that people are not still aware of different services of mobile phone.

### **Case study-1. Investment in mobile phone business & Economic solvency**

Md.Hasmat Ali, Age-28, Village-Sirajabad, Up-zila-Islampur was unemployed 3/4 years back. His education is of class eight. He is the eldest son of the family. He could not continue his studies due to financial crisis. He tried his level best to get a job at peon position but failed. At that time his family passed the days in such a situation that they could not afford food properly. In such miserable situation he decided to establish a tele-centre in their local market close to Sirajabad High school. He arranged money & invested Tk. 15000. After starting business, he would not have to look behind. From the very beginning he got positive response. He earns through call sale, recharge card sale, flexi load. His business is profitable. He got return his investment in a short time. He earned about Tk. 4000 in a month at present. Now he is financially solvent & he is optimistic to expand his business in future.

### **5.4.2. Income analysis of mobile phone users:**

Poverty alleviation refers to increase in income. Mobile phone provides an opportunity of financial gain for mobile phone operator as well as users. Mobile users get the financial



benefit through market networking. Market networking developed through mobile phone which helped the users to get better prices selling the products. Better prices of commodities help to raise the income. Income brings economic benefit which is also influenced by access to mobile phone.

In the study Income data is collected considering time frame of before & after access to mobile phone.

**Table 5.10- Income data before using the mobile phone**

<b>Income range</b>	<b>Frequency</b>	<b>Percent</b>
2500-3000	15	62.5
3000-3500	8	33.3
3500-4000	1	4.2
Total	24	100.0

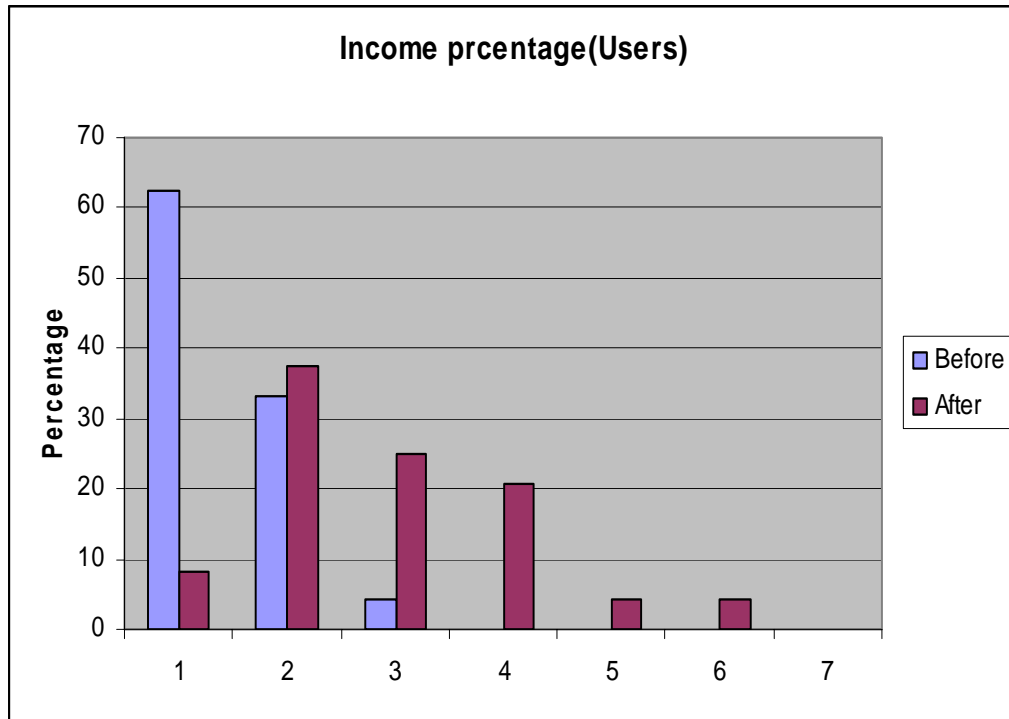
In the study it is found that before the mobile access 62.5% respondents (mobile users) belong to monthly income range of Tk. 2500-3000. Out of the total respondents, 33.3% belong to income level Tk.3000-3500 & only 4.2% belong to income level Tk. 3500-4000.

**Table5.11- Income data after using the mobile phone**

<b>Income range</b>	<b>Frequency</b>	<b>Percent</b>
2500-3000	2	8.3
3000-3500	9	37.5
3500-4000	6	25.0
4000-4500	5	20.8
4500-5000	1	4.2
5000+	1	4.2
Total	24	100.0

After access to mobile phone, most of the respondents 37.5% belong to an average monthly income range Tk. 3000-3500. Out of total respondents 25% belong to monthly income range Tk.3500-4000, 20.8% respondents have monthly income of Tk.4000-4500 & 4.2% respondents have monthly income more than Tk.5000.

**Diagram 5.2- shows income of user before & after using mobile phone**



**Comparison of Income data before access to mobile phone & after access to mobile phone shown in table-5.12 below.**

Income range	Frequency		Percentage	
	Before	After	Before	After
2500-3000	15	2	62.5	8.3
3000-3500	8	9	33.3	37.5
3500-4000	1	6	4.2	25.0
4000-4500	-	5	-	20.8
4500-5000	-	1	-	4.2
5000+	-	1	-	4.2
Total	24	24	100	100.0

In the table the study finds that before using mobile phone, 62.5% of total users had an average income of Tk.2500-3000. After using mobile phone, the proportion of users belonging to the income range of Tk.2500-3000 has been reduced to 8.3%. On the other hand, the proportion of users belonging to income range of Tk.3000-3500 has been increased from 33.3% to 37.5%. Users belonging to income range Tk. 3500-4000 have been increased from 4.2% to 25%. In the study we also find that no user belong to income level of Tk.4000-4500, but after access to mobile phone 20.8% user belong to the income range of Tk.4000-4500. Here the study finds significant growth in average monthly income of mobile phone users.

### **Analysis of income corresponding to access to mobile phone**

As shown above mobile phone has brought positive change in income status of mobile users. The effect of mobile phone has been identified in the desired direction. The people who have access to mobile phone get better income. Now the study intends to assess the significance effect of mobile phone on income of the mobile phone users.

To assess the significance, first, the study intends to find out the extent of relationship between access to mobile phone & income. Correlation coefficient measures the extent of relationship between these two variables- access to mobile phone & income. Then the study intends to calculate significance of such relationship.

**Income data corresponding to access to mobile phone given in table-5.13 below:**

		Monthly Income			Total
		2500-3500	3500-4500	4500-5000+	
Visiting time/access to mobile(monthly)	3	1	0	0	1
	4	4	1	0	5
	5	3	1	0	4
	6	2	0	0	2
	7	1	1	0	2
	8	0	3	0	3
	10	0	3	0	3
	12	0	2	0	2
	15	0	0	1	1
16	0	0	1	1	
Total		11	11	2	24

**Correlation between access to mobile phone & Income, Table-5.14**

	Income (monthly)
Access to mobile phone (monthly)	0.807

In the above table relationship between two variables- Access to mobile phone & monthly income of accessed sample has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between the two variables is 0.80 which is less than 1. There exists strong relationship between access to mobile phone & income of the mobile users.

From the above result it is inferred that – More access to mobile phone bring more income to the mobile users.

**Significance assessment: monthly income corresponding to mobile access; Table-5.15**

		Income (monthly)		Total
		2500-3500	3500-5000+	
Mobile access (monthly)	3-6	10	2	12
	6+	1	11	12
Total		11	13	24

**Chi-Square Test, Table 5.15.1**

	Value	Sig.
Pearson Chi-Square	13.59	0.000

In above chi-square test table it is found that chi-square value is 13.59, p value is 0.00. Here p value is less than .05 which means that the relationship between access to mobile phone & income is significant. From the analysis it is inferred that due to access to mobile phone income rise significantly.

### Regression analysis:

In the above discussion the study analyzed the effect of mobile phone on income and finds a significant relationship between access to mobile phone & monthly income. Here, the study intends to show the movement of monthly income in terms of access to mobile phone. Access to mobile phone as a predictor predicts on monthly income.

**Regression Table-5.15.2**

	<b>Standardized Coefficients</b>	<b>t-value</b>	<b>Sig.</b>
Access to mobile phone ( predictor)	.807	6.415	.000

Dependant variable: monthly income of mobile users

In the table, it is found that regression coefficient is 0.807. Higher the regression coefficient higher the effect which means that access to mobile has higher effect on monthly income. If access to information increases, monthly income will increase subsequently. Here, t-value is 6.415 & p value is 0.000. P-value is less than 0.05, which shows that there exists a significant relationship between access to mobile phone & monthly income.

### Opinion of the mobile phone users regarding Income generation:

In the above discussion the study finds that there is a close relationship between access to mobile phone & income generation. Here the study goes for find out the reasons of income generation. In response to such question the mobile users opined that better prices of Agri commodities, reduction of communication cost, treatment cost and time & money savings plays role to raise in monthly income. Opinion of the mobile phone users given in the following table.

### Mobile phone generate income (Frequency table-5.16)

Opinion	Frequency	Percent
Better price & com. Cost reduced	19	79.17
Treatment cost reduced	3	12.5
Time & money saving	2	8.33
Total	24	100.0

### Comparing mobile phone users income to mobile non-users income-

For the validation of the data, the study conducted a small survey at Kandarchar, Islampur as control area & inquired into the people having no access to ICT. In the table study consider the non-users income & compare it to the income of mobile users. **Table- 5.17**

		User	Non-User	Total
Income	Below 2500-4000	17	12	29
	4000-5000 above	7	0	7
	Total	24	12	36

In the table mobile phone users & non- users income is analyzed. From the analysis the study derived a comparison between users & non-users income. From the table the study finds that- Pearson Chi-square = 15.1500 p=0.019.

As  $P < .05$ , User and Non-users income is differed. From the table, it can be inferred that there is a significant difference between users & non-users income.

### 5.4.3. Measurement of indicators (indirect income)

#### a) Verification of Agri- prices

Rural people are basically Agri-based. Agriculture is their main profession. Once upon a time they were isolated from the market price information. Even they were remaining ignorant of the Agri prices offered by the government. Mobile creates an opportunity to get such information. Out of 24 persons 13 come to tele-centre & use mobile phone to get Agri price information. In response to query of access to market related information & verification of Agri prices, 13 (54.2%) respondents stated that they are getting more market related information as well as they can verify the prices of commodities after access to mobile phone.

**Table 5.18 - verification of Agri prices**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	54.2
No	11	45.8
Total	13	100.0

**Access to more market related information; Table-5.19**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	54.2
No	11	45.8
Total	13	100.0

#### b) Getting better price after using mobile phone

Once upon a time rural people were ignorant of the real prices of their produced output. They were deprived of the actual prices due to the fabrication of the prices. Mobile phone offers price information of commodities. Using mobile phone people can get better price. In



response to the query of getting better prices using mobile phone 54.2% stated that they are getting better prices. Out of total respondents, only 7.7% made no comments.

**Table-5.20: better price of commodities**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	54.2
No	10	38.1
No comments	1	7.7
Total	24	100.0

**Correlation between access to mobile phone & better prices of commodities**

As shown above mobile phone brought positive change in prices of Agri commodities. People who access to mobile phone get better prices. The effect of mobile phone on prices of commodities has been identified. Now the effect of mobile phone on prices of commodities will be calculated. The effect of mobile phone on prices of commodities is measured through correlation coefficient. Correlation coefficient measures the extent of relationship between these two variables.

**Correlation Table-5.20.1**

	<b>Better prices for commodities</b>
<b>Access to mobile phone</b>	0.47

In the above table relationship between two variables- Access to mobile phone & better prices for commodities has been measured. Here, the correlation coefficient between the two variables is 0.47 which is less than 1. The relationship is more or less strong.

From the above result it is inferred that – More access to mobile phone ensure better prices for commodities.

### **c) Middle-men influence on market price related information**

Price dispersion is the difference between the actual & manipulated price of a commodity. Price dispersion is a manifestation & indeed, it is the measure of ignorance in the market. The maintenance of appreciable dispersion of prices arises chiefly out of the fact that knowledge becomes obsolete. Supply, demand & the prices of commodities change over time. There is no method by which buyers or sellers can ascertain the new prices in the market except by search which is done through access to mobile phone.

Agricultural products are both seasonal & perishable. Information about supply & demand is critical for determination of market prices & for trading bargaining power. Information travels from rural market to urban market through middlemen which is very traditional- time consuming & supply, demand situation change quickly. Mobile phone is very useful in exchange information on prices, supply & demand situation.

#### **Mobile phone reduce the influence of middle-men in accessing market price related information; Table-5.21**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	54.2
No	10	38.1
No comments	1	7.7
Total	24	100.0

Using mobile phone one can get into market information and get rid of the middle- men influence. In response to the query of mobile phone reduces the influence of middle-men in accessing market price related information, 54.2% respondents stated that mobile phone reduces the influence of middle-men. Out of total respondents only 7.7% made no comments regarding middle-men influence on commodity prices. The study finds that most of the

respondents agreed with the statement that mobile phone reduces the influence of middle-men discovering the prices of commodities.

### **Correlation between access to mobile phone & reduction of middle-men influence**

From the above discussion we find that mobile phone brought positive change regarding middle-men influence on prices of Agri commodities. People who access to mobile phone get rid of middle-men influence. The effect of mobile phone on middle-men influence has been identified. Now the effect of mobile phone on reduction of middle-men influence on prices of commodities will be calculated through correlation coefficient. Correlation coefficient measures the extent of relationship between these two variables.

#### **Correlation table-5.21.1**

	<b>Better prices for commodities</b>
<b>Access to mobile phone</b>	0.47

In the above table relationship between two variables- Access to mobile phone & reduction of middle-men influence has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between the two variables is 0.47 which is less than 1. The relationship is more or less strong.

From the above result it is inferred that – More access to mobile phone ensure reduction of middle-men influence on price of commodities.

#### **d) Getting better exchange rate**

Bangladesh is a manpower exporting country. There is also a good number of NRB working in different country. When they return to their native place they bear some foreign currency or send foreign currency through informal way. Exchange rate of foreign currency changed time to time. So, information is necessary to get proper exchange rate. Mobile phone

offers such information. In the study, we find that only 4(16.7%) respondents use mobile for this purpose. In response to the question of getting better exchange rate, all the respondents stated that they get better exchange rate after access to mobile phone.

**Frequency Table 5.22- Exchange rate**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
yes	4	16.7
No	20	83.3
Total	24	100

No= for not statement; as respondents use mobile not for this purpose

**e) Access to employment information by mobile phone**

In rural area, it is rare to get Newspaper regularly. All kinds of national level employment information published in Daily Newspaper. If available it is expensive to rural poor people. So, the rural people are totally disconnected from job information. But, mobile phone connected rural people with such information. Those who search job information in mobile phone can get such information. In the study we find only 8.3% respondents go to tele-centre to use mobile for such purpose. All of them stated that access to employment information through mobile phone is increased. They also stated that mobile phone provide more employment information.

### Frequency Table 5.23 - Employment information

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Increase	2	8.3
Decrease	-	-
Total	2	8.3

### Correlation between access to mobile phone & employment information

Here, it is found that mobile phone effect on employment information positively. People who are in search of job can get such information access to mobile phone. Now the study intends to measure the extent of effect of mobile phone on employment information. The effect of mobile phone on employment information is measured through correlation coefficient.

#### Correlation Table-5.23.1

	<b>Better employment information</b>
<b>Access to mobile phone</b>	0.163

In the above table relationship between two variables- Access to mobile phone & more employment information has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between the two variables is 0.163 which is less than 1.

From the above result it is inferred that – More access to mobile phone ensure more employment information.

## **Case study- 2. Mobile phone & sending money**

Md. Latif, Age-47, Vill. Pachabahela, up-zila-Islampur is a farmer. He has a small land. His son works in a garments industry for 9/10 years. His son helped him a lot sending money. His son sent money once in two months usually. Earlier his son would send money through post office. He would have to wait for a long time to get the money. Even he had to go to post office to collect money. It would take 15/20 days after sending money. Even, he could not receive the money at the time of crying need. At present mobile phone relieved him from such hazard. His son sends money through mobile phone which helped to get money in short time. Now he can receive & use money in the time of need. Sending money through post office is time consuming & costly. Mobile phone helps in saving cost & reducing time.

## **5.5. Measurement of Indicator (Social Benefits)**

### **5.5.1. Getting health information & benefit from health service**

Health service in Bangladesh is very poor. Govt. expanded health service at rural level through community health clinic; but service from community health clinic totally absent due to lack of medical doctor. Service from up-zila health complex is also very poor. In this situation rural people are still out of primary health care service provided by the govt. Can we imagine the situation of sudden attack of disease like diarrhoea? In this miserable situation, mobile phone emerged as blessing to the rural people. One can easily get into health service round the clock through mobile phone. In the study, it is found that 41.7% respondents use mobile phone for health service. Among them, 16.7% take primary health service & only 12.5% take emergency treatment suggestion. All of the respective users stated that they have been benefited from health service introduced by mobile phone. The most commonly stated benefits are- doctors fee, reduced communication cost & time saving.

**Table 5.24 -Health information from mobile phone**

<b>Service statement</b>	<b>Frequency</b>	<b>Percent</b>
Health information	3	12.5
Primary health service	4	16.7
Emergency treatment suggestion	3	12.5
Total	10	41.7

**Table 5.25 - Benefits from health service**

<b>Benefits</b>	<b>Frequency</b>	<b>Percent</b>
Doctors fee, com. Cost & time saving	10	41.7
Total	10	41.7

**Correlation between access to mobile phone & benefit from health service**

Here, it is found that mobile phone positively effect on health service. People who access to mobile phone for health service get benefit from such service. The effect of mobile phone has been identified. Now the study intends to measure the extent of effect of mobile phone on health service. The effect of mobile phone on health service is measured through correlation coefficient.

**Correlation Table-5.25.1**

	<b>Benefit of health service</b>
<b>Access to mobile phone</b>	0.004

In the above table relationship between two variables- Access to mobile phone & benefit of health service has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between these two variables is 0.004. The extent of relationship between these two variables is very weak.

From the above result it is inferred that –Access to mobile phone has little effect on benefit from health service.

### **Case study -3. Access to mobile phone & health service**

Saleha Begum, Age-42, Vill-Sirajabad, mother of two sons & one daughter. Her husband works in Dhaka. 7/8 months back, during rainy season one of her child got sick of severe fever & diarrhoea. There was no MBBS doctor in nearby location. Up-zila hospital is about 12 km. away from her location. Rickshaw is the only communication vehicle to go to up-zila health centre. Beside this, she was in fear of availability of doctor in the hospital. There is one mobile centre near the locality. She would not know the mobile health service. One of her neighbor gave the message of mobile health service. The neighbor who owned mobile phone did not know the help-line number. So nobody helped her in this miserable situation. Then she went to tele-centre operator named Mr. Hasmat & woke him up. She requested him to connect her with help-line. Then she talked to the doctor & got suggestion about the disease of her child. With that suggestion her child got well within short time. Mobile health service removed her anxiousness & helped her child to get better at dead of night. Help-line service of mobile phone creates the opportunity of getting service at minimum cost. It saves time & cost, freed from the hassle of communication & doctors availability.

### **5.5.2. Getting Education information & Education benefits**

ICT brought tremendous development in education sector which introduced e-learning method. One can acquire learning on specific subject staying at home through this process. E-learning is basically internet based. It is unfortunate that such facility is still absent in rural area. But mobile phone has come with education information to the subscriber. Access to mobile phone means creation of more opportunities. Education information is of such



opportunities. One can get such information like Examination result, Admission information etc. through mobile phone.

The study finds that only 12.5% out of total respondents use mobile phone for education purpose. Among them 8.3% use mobile for Examination result & 4.2 % for admission information.

**Table 5.26 - Education Information**

<b>Statement</b>	<b>Frequency</b>	<b>Percent</b>
Exam result	2	8.3
Admission information	1	4.2
Total	3	12.5

**Education benefits:**

All the respondents are benefited from education information introduced by mobile phone. The most commonly benefits are- getting Examination result, Education cost reduction & Admission information.

**Table 5.27 -Education Benefit**

<b>Benefits</b>	<b>Frequency</b>	<b>Percent</b>
Getting Exam. Result	1	4.2
Education cost reduction	1	4.2
English language learning	1	4.2
Total	3	12.5

### **Correlation between access to mobile phone & better education**

Here, it is found that people who access to mobile phone for education information get benefit from such service. The effect of mobile phone has been identified. Now the study intends to measure the extent of effect of mobile phone on education information. The effect of mobile phone on education information is measured through correlation coefficient.

**Correlation table-5.27.1**

	<b>More education information</b>
<b>Access to mobile phone</b>	0.189

In the above table relationship between two variables- Access to mobile phone & getting education information has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between these two variables is 0.189. The extent of relationship between these two variables is weak.

From the above result it is inferred that –Access to mobile phone has more or less effect on education information. If one access to mobile phones more, one will get more education information.

### **Case study- 4. Access to mobile phone & Education information**

Head teacher of Pachabahela High School has been serving in this school for a long time. He has about more than 25 years teaching experience. Teachers & students get anxious & curiosity usually about Examination result. Once upon a time they would have to wait for a long time even after publishing the result. The result published in the morning hour, reached to the students of rural area in evening hour. Teachers, students & guardians passed this long time in anxious which is nothing but sufferings. Now the students get Exam result through mobile phone just after publishing the result at the web-site. Mobile phone relieved teachers, students & guardians from sufferings of getting result happened earlier.

### 5.5.3. Social Bondage

In rural areas people remain isolated from their nearest one who lives in distant place. Beside this, Bangladesh is a manpower exporting country. There is also a good number of NRB working in different country. These expatriates & their relatives stay in touch with the help of mobile phone. As most people in rural areas are illiterate/ semi- literate, they depend on others to understand local language. Beside this reason, buying a mobile phone & bearing its expense is still out of the means of the rural poor. Thus mobile at tele-centre offers the opportunity to contact nearest one.

Mobile phone has been extensively used for making social purposes. It is found that social calls dominate over other purposes.

#### Communication with nearest one (Frequency table-5.28)

Statement	Frequency	Percent
Yes	17	70.9
No	7	29.1
Total	24	100

In many cases, these social calls have also business purpose. In most cases the purpose includes sending of money, purchase of land, construction of house, cultivation of land etc. Mobile phone affected positively family relationship. In the study it is found that 17 (70.9%) respondents use mobile phone for this purpose. 70.9% respondents opined that mobile phone enabled people to make contact with nearest one. It made the people staying close to each other who are aparted.

A significant percent 52.95% of the respective users stated that family relationship gets better due to mobile communication. In response to mobile phone effect on overall family& social relationship respondents' opinion are given in the table below.

**Effect of mobile phone on family & social relationship; Table 5.28.1**

<b>Family &amp; social relationship</b>	<b>Frequency</b>	<b>Percent</b>
Relationship gets better	9	52.95
Easy communication	6	35.29
Mobile make us closer	1	5.88
Getting instant message	1	5.88
Total	17	100

**Correlation between access to mobile phone & communication with nearest one (social bondage)**

From the above discussion we find that mobile phone brought positive effect on communicate with nearest one. People who access to mobile phone, his family relationship gets better. The effect of mobile phone on family relationship has been identified. Now the effect of mobile phone on family relationship will be calculated through correlation coefficient. Correlation coefficient measures the extent of relationship between these two variables- access to mobile phone & communication with nearest one. **Cor.Table 5.28.2**

	<b>Communication with nearest one</b>
<b>Access to mobile phone</b>	0.26

In the above table relationship between two variables- Access to mobile phone & communication with nearest one has been calculated. Here, the study finds that there exists positive correlation & the correlation coefficient between the two variables is 0.26 which is less than 1. There is significant positive relationship between these two variables.

From the above result it is inferred that – More access to mobile phone ensure more communication with nearest one which strengthen the social bondage.

### **Case study- 5. Access to mobile phone & keeping Touch**

The name of the village is Sirajabad under Islampur Up-zila. 5/6 years ago, there was no telephone or mobile connection in that village. People of that village were isolated from new events happened in the world & even from their nearest one. Beside this Bangladesh is manpower exporting country. There are some residents in that village who left for abroad to earn livelihood. Once they left country remain isolated from kith & kin & nearest one for a long time. The only mode of communication was writing letter which would take even months to be connected. The advent of mobile phone brought positive change in rural life & removed their isolation. In response to a question of using mobile phone at tele-centre, the villagers informed that most people in that area are illiterate/semi-literate. They depend on others to understand local loop language. Beside this, buying mobile phone & bearing its expenses is still out of their means, Thus mobile at tele-centre opened the window of their connectivity. The advent of mobile developed the connectivity. Now the expatriate send message to the tele-centre & talked to their nearest one. The villagers communicate with expatriates frequently & share their regular problems. Reportedly most of the conversations are on information on job opportunities out side the country, exchange of greetings with nearest one, information on socio-economic condition of the village. The contact with each other removes ones absence & loneliness which developed their social bondage.

## 5.6. Key Informants opinion

In the study it is mentioned that four people were interviewed as “key informants” and questioned about the effect of mobile. The key informants are Teachers (Head teacher & computer teacher) of those schools which are close to the tele-centre & teachers have deep ideas about mobile phone as well as tele-centre. Basically Key informants were questioned about the effect of mobile phone. Key informants opined that mobile phone offered the opportunity of access to information.

**Informants’ opinion; Table-5.29**

<b>Effect of mobile phone</b>	<b>Frequency</b>	<b>Key informants (%)</b>
Mobile phone freed rural people from the influence of middle-men	4	100
People get better access to information & communication	4	100
People get better prices	4	100
Mobile created income generation opportunities	4	100
Mobile phone helps to augment existing livelihood	4	100

Key informants opined that people get information on health, education, market price easily. All the key informants opined that mobile phone ensure better access to information, better prices, better income, free from influence of middle-men & helps to augment existing livelihood.

**All the key informants stated that-**

- Those who do not understand local loop language they take help from tele-centre to access to mobile phone.
- Teachers' & student can collect exam. Result through mobile phone easily at reduced cost.
- People get health service by using mobile phone which freed the people from the sufferings of health hazards. But mass people are not still well informed regarding health service of mobile phone.
- Rural people get better prices of Agri commodities & freed from the influence of middle-men who deprived them hiding the real prices of commodities; but proper advertisement is necessary to send such message to all commodities.
- Mobile generates employment opportunity. Mobile operators in the study were unemployed earlier. Now they are self reliant operating tele-centre as small entrepreneurship.

## **Chapter 6: Test of Research Hypothesis**



Test of hypothesis is a very useful tool for drawing inference about the relationship among the different variables. In this study a hypothesis – “The more access to mobile phone the more will be the socio economic benefits to the rural people” has been assumed. The study will make inference on the hypothesis considering the findings of different statement. For making decision on the hypothesis- correlation, linear regression & chi-square test have been performed in the study.

### **6.1. Summary findings corresponding to statement**

In this section, important findings corresponding to the statement have been summarised in order to draw inference whether the statement findings are relevant to the research hypothesis or not. If the statement findings are relevant to the research hypothesis, then assumed research hypothesis will be accepted. A summary of the findings corresponding to the statement is given in table below.

**Table 6- Summary finding corresponding to statement**

<b>Statement</b>	<b>Relevant findings</b>	<b>Conclusion</b>
<p>Access to mobile phone helps to rise in income</p>	<p>In correlation analysis, monthly income of mobile users is positively related to access to mobile phone. Correlation coefficient between these two variables is 0.807 which is strongly correlated.</p> <p>In regression analysis, regression coefficient is 0.807 &amp; <math>p= 0.000 &lt; .05</math>. With increase of access to mobile phone income of the mobile users will be increased significantly.</p> <p>In chi-square test, <math>p= 0.000 &lt; 0.05</math>, which shows that there exist significant positive relationship.</p> <p>This finding is consistent with key informants' perception.</p>	<p>The statement inferred that more access to mobile phone results in more income of the mobile users.</p> <p>The statement is acceptable &amp; supports the assumed hypothesis.</p>
<p>Access to mobile phone helps to get better prices of commodities</p>	<p>In correlation analysis, getting better prices of commodities is positively related to access to mobile phone. Correlation coefficient between these two variables is 0.46. The extent of the relationship is more or less strong.</p> <p>This finding is consistent with key informants' perception.</p>	<p>The statement inferred that more access to mobile phone results in better prices of commodities.</p> <p>The statement is acceptable &amp; supports the assumed hypothesis.</p>

Statement	Relevant findings	Conclusion
<p>Mobile phone reduces middle-men influence</p>	<p>The relationship between access to mobile phone &amp; reduction of middle-men influence is positive. The extent of relationship is 0.46 which is more or less strong.</p> <p>This finding is consistent with key informants' perception.</p>	<p>The statement inferred that more access to mobile phone results in more reduction of middle-men influence.</p> <p>The statement is acceptable &amp; supports the assumed hypothesis.</p>
<p>Mobile phone provides employment information</p>	<p>The association between access to mobile phone &amp; employment information is positive. The extent of this association is 0.163 which is weak.</p> <p>This finding is consistent with key informants' perception.</p>	<p>From the findings, it is inferred that the more access to mobile phone, the more of getting employment information.</p> <p>The statement is acceptable &amp; supports the assumed hypothesis.</p>

Statement	Relevant findings	Conclusion
<p>Access to mobile phone provide health service benefit</p>	<p>The relationship between access to mobile phone &amp; health service benefit is positive. The extent of relationship is 0.004 which shows a very weak relationship. Increase of access to mobile phone results in benefit of health service slightly.</p> <p>This finding is consistent with key informants' perception.</p>	<p>From the findings, it is inferred that the more access to mobile phone, the more benefit from health service.</p> <p>The findings support the assumed hypothesis.</p>
<p>Mobile phone provides education information</p>	<p>The relationship between access to mobile phone &amp; getting education information is positive. The correlation coefficient is 0.189 which shows a weak relationship. Increase in access to mobile phone results increase in education information.</p> <p>This finding is consistent with key informants' perception.</p>	<p>From the findings, it is inferred that with more access to mobile phone, one will get more education information.</p> <p>The findings support the assumed hypothesis.</p>

Statement	Relevant findings	Conclusion
Access to mobile phone provides better communication with nearest one.	<p>There exists a positive relationship between access to mobile phone &amp; communication with nearest one. The extent of this relationship is 0.26 which shows weak relationship.</p> <p>Increase in access to mobile phone results in strengthening relationship with nearest one.</p> <p>This finding is consistent with key informants' perception.</p>	<p>From the findings, it is inferred that more access to mobile phone results in better relation with nearest one.</p> <p>The findings support the assumed hypothesis.</p>

Beside the above findings, mobile phone users & non- users income is analyzed. From the analysis the study derived a comparison between users & non-users income. From the analysis the study finds that- Pearson Chi-square = 15.1500 p=0.019. As P<.05, User and Non-users income is differed. Thus it can be inferred that there is a significant difference between users & non-users income.

Mobile as an investment has been found to be profitable for the operator. Income of the PTC-1 owner increased to 140% & PTC-2 owner increased to 137%. There has been a substantial increase in income of those who operate PTC.

From the above discussion the study finds that all the statements corresponding to the findings are acceptable. The findings establish that access to mobile phone may be one of the important ways for alleviation of rural poverty. All the findings under different statement support the research hypothesis. Considering the above findings, the research hypothesis - **“The more access to mobile phone the more will be the socio economic benefits to the rural people”** is acceptable & access to mobile phone brings socio-economic benefit to the rural people.

# **Chapter7: Conclusion & policy implications:**

Findings from data analysis show that mobile phone at tele-centre carry a huge potential for alleviating poverty through its catalytic role in generating income of rural poor. In Pachabahela & Sirajabad, the tele-centre through mobile phone creates opportunity of access to information. For such opportunity the poor villagers visit the tele-centre several times in a month to use mobile phone for different purposes. The purposes for which poor villagers use mobile phone are- getting price information of commodities, communication with nearest one, health information, education information, employment information. The study shows that availability mobile phone bring both economic & non-economic benefits to the rural poor villagers.

Mobile phone developed the market channel through which poor villagers get easy access to price information of different commodities. Access to price information increases villagers bargaining power & freed them from middle-men influence. The poor villagers get better prices of the commodities.

Access to mobile phone substantially reduces communication cost as the poor villagers can communicate with nearest one at the cost of a call charge. Access to mobile phone helps to strengthen the relationship.

Getting health service is the fundamental right of the people; but people are still out of the right of health service. Mobile phone comes to the people with health service as a blessing. The study finds that access to mobile phone provides health service to the rural people at the cost of call charge. Mobile users get several benefits of doctor fee, reduction in communication cost, rapid health suggestions.

Operating tele-centre through mobile phone paves the way of income& generates employment. The study finds that tele-centre operator raises income operating mobile phone which makes the operator self- reliant.

The study shows that income of mobile users raise significantly because of getting better prices of commodities, reducing communication cost & health service cost, increasing productivity.

The study finds that income of both mobile operators & users increased significantly. As income increased, affordability of sampled groups increased. Increased in affordability alleviate poverty. In the same way the study finds that mobile phone users get social benefits significantly. Social benefits increase productivity of the poor. If productivity increases, income will increase. Increase in income thus alleviates poverty.

Considering these multi-dimensional benefits of mobile phones, the study arrives at the following general conclusion & policy implications:

### **Parting with old perceptions:**

Usually mobile phone considered as consumer good; but the study argues that mobile should be treated not only as consumer good, but also as a production good especially in rural areas. In the study it is found that income of both users & operators rise significantly because of access to mobile phone. Rise in income contribute to alleviate poverty. PRSP & Rural development policy usually prepared considering traditional factors like-Food for Work program, hundred days working program. The ICT factor never considered as important factor. So the findings in the study call for re-orientation in thinking of policy makers. Policy regarding rural development & poverty reduction should involve the ICT as strong supporting factor.

### **Creating opportunity for rural tele-centre:**

Our economy is giving emphasize on SME sector. ICT business in rural area is still neglected. Rural tele-centre based on mobile phone creates the opportunity of access to information of all section of people. The study finds that rural tele-centre through mobile phone provide price information, education information, employment information & health



service to the poor people. If the tele-centre operators are trained technically & patronized financially, the tele-centre will be able to provide better service to the rural people. Ensure of universal information service is possible through these rural tele-centre.

### **Communication technology for the poor**

In ICT sector, Bangladesh experienced a tremendous development; but this development is confined to urban areas. Rural areas are lag behind than urban area in terms of access to information & services which resulted in inequitable distribution of income & wealth. It is need to expand information services encouraging tele-centre efforts. There is need to strengthen the deployment of information infrastructure to reach the poorest & remote areas.

ICT interventions that target rural poverty alleviation would work best if they are integrated within a wider poverty alleviation agenda. Mobile operator & tele-centre will be most benefited if they come with more publicity to the rural poor about the benefit of mobile health service, mobile remittance, price information. Publicity of such information will grow awareness among the rural poor which will help them awarding sustainable poverty free life.

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#### Web Sites

[http://devdata.worldbank.org/AAG/bgd\\_aag.pdf](http://devdata.worldbank.org/AAG/bgd_aag.pdf)

## Appendices

### Appendix-1

#### Questionnaire-1 (information on PTC users)

Personal Information: a) Name-

b) Age-                      c) Gender- M/ F    d) Marital status- Married/ Single/ Divorced/ widowed

e) Level of Education-                      f) Principal Occupation-

<b>PTC Users Information</b>			
<b>NO</b>	<b>QUESTIONS</b>	<b>STATEMENT</b>	
1	Is there any telecenter in your locality	1. Yes 2. No	If No, go to 35
2	If Yes, please say about the tele-centre	.....	
3	Which devices are available in Tele-centre	1. Mobile 2.Internet 3.Fixed line phone 4. All	
4	Have you any personal mobile phone?	1. Yes 2. No	
5	If No, Why.....	1. Lack of affordability 2. Costly 3.Additional expenditure 4.All	
6	Do you use mobile phone at tele-centre	1. Yes 2. No	
7	If Yes, why do you use mobile phone	1.Dependable way to get information 2.Easy to get services 3.low cost 4.All	
8	How many times per week/ month you visit tele-centre to use mobile phone...		
9	Is the mobile phone useful to you & your family	1. Very useful 2. Somewhat useful 3. not useful	
10	If the mobile phone helped your household, can you quantify the total value?	1. Less Tk.500 2.Tk.500-1500 3.Tk.1500-2500 4. Tk.2500more	
11	Do you get information through mobile about issues of interest to you?	1. Yes 2. No	
12	If Yes, for which purpose you usually use mobile phone at tele-centre	1. Market price Information 2.Education 3. contact with friends & family 4.Employment 5.Health Information 6.To know Exchange rate	

<b>Market Price Information</b>			
13	Do you get buy/ sale information of Agri products?	1. Yes 2. No	
14	Can you verify the prices of Agri products?	1. Yes 2. No	
15	Do you get better prices after using mobile at Private telecenter	1. Yes 2. No	
16	Does mobile phone increases access to more market related information		
17	Can mobile phone reduce the influence of middlemen in accessing market/ price related information		
18	Do you think that middle men distort the prices of Agri commodities	1. Yes 2. No	
19	If yes, how		
20	Do you think that after access to mobile, consumer & producer welfare is .....	1. Increase 2. Decrease 3. No change	
<b>Exchange Rate</b>			
21	Does mobile phone increase access to more exchange rate related information		
22	Do you get better exchange rate using mobile at PTC	1. Yes 2. No	
<b>Employment information</b>			
23	Does mobile phone provide more employment information	1. Yes 2. No	
24	If Yes, please say about that information	.....	
25	Do you think that access to employment information through mobile phone is ...	1. Increase 2. Decrease 3. no change	

<b>Social benefits</b>			
26	Do you get health information from mobile phone	1. Yes 2. No	
27	If Yes, please say about that information...		
	Do you think that such information make you benefited	1. Yes 2. No	
	If Yes, what benefit you get from that service	1. Doctors fee 2. Communication Cost 3. Time savings 4. all	
28	Do you get education information from PTC	1. Yes 2. No	
29	If Yes, What kind of education information you get from PTC?	1. Exam. Result 2. Admission information	
	Please say about the education benefits you get from PTC	.....	
30	Can you communicate with nearest one through mobile at PTC?	1. Yes 2. No	
	If Yes, please say about mobile phone impact on overall family relationship	.....	
	Do you think that family & social relation is ...	1. improved 2.worsened 3.no change	

<b>Income Information</b>			
31	Has the mobile phone made any impact on your income	1. Yes 2. No	
32	If Yes, Your income....	1. Increase 2.decrease 3. No change	
	What is your income after using Private telecenter	1. Tk.2500-3000 2.Tk.3000-3500 3.Tk.3500-4000 4.Tk.4000-4500 5.Tk.4500-5000 6.Tk.5000+	
	What was your previous(3/4 years ago) income ( before access to mobile phone )	1. Tk.2500-3000 2.Tk.3000-3500 3.Tk.3500-4000 4.Tk.4000-4500 5.Tk.4500-5000 6.Tk.5000+	
33	Has the PTC created new income generation opportunity	1. Yes 2. No	
34	If Yes, Why	.....	

<b>Mobile Non-users</b>			
35	How you communicate with other		
36	How you sale your Agri products		
37	How you get health service		
38	What was your income 3/4 years ago	1.Below Tk.2500 2.Tk.2500-3000 3.Tk.3000-3500 4.Tk.3500-4000 5. Tk.4000-4500 6.Tk.4500-5000	
	Your present income	1.Below Tk.2500 2.Tk.2500-3000 3.Tk.3000-3500 4.Tk.3500-4000 5. Tk.4000-4500 6.Tk.4500-5000	
	If income increase/ decrease, clarify the reason		

## Appendix-2

### Questionnaire-2 (information on key informant)

Personal Information: a) Name-  
 b) Age- c) Gender- M/ F d) Marital status- Married/ Single/ Divorced/ widowed  
 e) Level of Education- f) Principal Occupation-

<b>Key Informants Opinion</b>			
1	Do you know about Private telecenter in this locality	1. Yes 2. No	
2	If Yes, please say about PTC	.....	
3	What kind of information PTC provide through mobile	1. Market price of Agri products 2. Health/ education information 3. Assist those people who have no mobile 4. Contribute to rural small business. 5. All	
4	Do you think that mobile phone at PTC helped in finding the forms of livelihood that augment existing livelihoods?	1. Yes 2. No	
5	Do you think that access to information helped rural people to be free from the influence of middle men?	1. Yes 2. No	
6	Do you think that rural poor farmer have better access to current information & communication	1. Yes 2. No	
7	Do you think that rural poor farmer get better prices of Agri products than earlier?	1. Yes 2. No	
8	Has the mobile phone created income generation opportunities to rural poor & PTC owner	1. Yes 2. No	
9	If Yes, please say how	.....	



## Appendix-3

### Questionnaire-3 (information on PTC operator/ Owner)

**Personal Information: a) Name-**

- b) Age-      c) Gender- M/ F      d) Marital status- Married/ Single/ Divorced/ widowed  
 e) Level of Education-                      f) Principal Occupation-

<b>PTC owner information</b>			
1	What devices are used in PTC to provide service	1. Mobile 2. Land phone 3. Internet 4. Others	
2	What services PTC provide	1. Serve customers 2. Provide price information 3. cut out middle men 4. All	
3	What are the income sources of PTC?	1. Card sale 2. flexi load 3. call sale 4. All	
4	What is the monthly income for each source	1. Card sale.....2. flexi load- 3. Call sale-	
5	Do you make profit	1. Yes 2. No	
6	If yes, What is the amount of monthly profit	.....	
7	What was the average monthly income before owning the PTC	.....	
8	What is your present income	.....	
9	What is the amount of investment in PTC	.....	
10	How long you operate the PTC	.....	
11	What you did before PTC operation	.....	
12	Do you think that Mobile phone generate employment	1. Yes 2. No	
13	If Yes, How	.....	
14	Do you have another source of income	1. Yes 2. No	
15	If Yes, please say about that source of income		