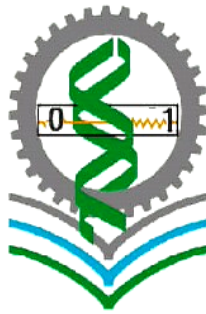


Usages of Mobile Phone in Rural Agricultural Marketing Function: A Study on Dinajpur District, Bangladesh.



HAJEE MOHAMMAD DANESH SCIENCE AND TECHNOLOGY
UNIVERSITY (HSTU), DINAJPUR.

Internship Report

By-

Md. Nahid Hassan
Student Id.1505097
MBA in Marketing
Department of Marketing
HSTU, Dinajpur.

MASTER OF BUSINESS ADMINISTRATION (MBA)

(This Internship report has been prepared for submission into the Department of Marketing, Hajee Mohammad Danesh Science and Technology University, Dinajpur, as a partial requirement for fulfillment Degree of MBA in Marketing.)

June- 2016

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Function: A Study on Dinajpur District, Bangladesh.**



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Lecturer



Department of Marketing,
HAJEE MOHAMMAD DANESH SCIENCE AND TECHNOLOGY
UNIVERSITY (HSTU), DINAJPUR.

June- 2016

DEDICATED TO
MY
BELOVED PARENTS

Letter of Transmittal

June, 2016

To

Md. Jamal Uddin

Assistant Professor

Department of Marketing

Faculty of Business Studies,

Hajee Mohammad Danesh Science and Technology University (HSTU), Dinajpur-5200

Subject: Submission of Internship report of MBA Program. On “Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh”.

Dear Sir,

This a great pleasure to submit my internship report on **“Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh”**, which is a part of MBA program. To you for your kind consideration, I made sincere effort to study related documents, materials, observe operations, examine related records, and collect primary data regarding attitude for preparation the report.

Within the time, I have tried my best to complete the pertinent information as comprehensive as possible.

Therefore, I will be very much glad to hear from you for further clarification.

Sincerely yours,

Md. Nahid Hassan

Student Id.1505097

MBA in Marketing

Department of Marketing

HSTU, Dinajpur.

Declaration

I, am **Md. Nahid Hassan**, Student ID No. **1505097**, MBA in Marketing, Department of Marketing, submitted my internship report entitled “**Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh.**” after completing my internship program. I have tried my level best to get together as much information as possible to enrich the report. I believe that it was a great experience and it has enriched both my knowledge and experience.

This report has been submitted in partial fulfillment of the requirement for the degree of Masters of Business Administration (MBA) in Marketing at Hajee Mohammad Danesh Science and Technology University, Dinajpur.

Md. Nahid Hassan

Student Id.1505097

MBA in Marketing

Department of Marketing

HSTU, Dinajpur.

Certificate of Supervisor

I, hereby declare that the internship report entitled “**Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh.** Is a useful record of the internship work done by **Md. Nahid Hassan, Student ID No. 1505097**, MBA in Marketing, Department of Marketing, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200. This report represents an independent and original work prepared on the basis of primary and secondary data collected and analyzed by the candidate. This report has not been accepted for any other degree and is not concurrently submitted in candidature of any other degree.

This entire work has been planned and carried out by the candidate my supervision and guidance. In my opinion, this report is sufficient in terms of scope and quality for the award of the degree of Masters of Business Administration (MBA) in Marketing from Hajee Mohammad Danesh Science and Technology University, Dinajpur.

SUPERVISOR
OF THE
Internship Program
Md. Jamal Uddin
Assistant Professor,
Department of Marketing,
Faculty of Business Studies,
HSTU, Dinajpur.

Certificate of Co-Supervisor

I, hereby declare that the internship report entitled “**Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh**”. Is a useful record of the internship work done by **Md. Nahid Hassan, Student ID No. 1505097**, MBA in Marketing, Department of Marketing, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200. This report represents an independent and original work prepared on the basis of primary and secondary data collected and analyzed by the candidate. This report has not been accepted for any other degree and is not concurrently submitted in candidature of any other degree.

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CO-SUPERVISOR
OF THE
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Md. Abdur Rouf
Lecturer,
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Acknowledgement

At first, I would like to express my gratefulness and harmony to the ALLMIGHTY the supreme authority of the Universe, without whom we would be nothing. Next I would like to express my kindness to my Beloved Parent whose continuous inspiration enrages me to make a right move in my life.

I am grateful towards some respected persons for their advice, suggestions, direction and cooperation which have enabled me to have an experienced in the dynamic environment such like in banking sector.

I would like to thank my honorable supervisor **Md. Jamal Uddin**, Assistant Professor, Department of Marketing, Faculty of Business Studies, Hajee Mohammad Danesh Science and Technology University, Dinajpur, whose help, suggestions and co-operations, the total report will be valuable..

I would like to thank my honorable co-supervisor **Md. Abdur Rouf**, Lecturer, Department of Marketing, Faculty of Business Studies, Hajee Mohammad Danesh Science and Technology University, Dinajpur, whose help, suggestion and co-operation in preparing the report.

I would like to thank from the deep of my heart to those people who are related with making of this report and make it a success.

I would like to express my indebtedness to my report all the teachers, Department of Marketing, Faculty of Business Studies, Hajee Mohammad Danesh Science and Technology University, Dinajpur, for helping me and giving assistance in preparing the report.

Md. Nahid Hassan

June- 2016

Acronyms and Abbreviations

| | | |
|--------|---|---|
| ICT | : | Information and Communication Technology |
| E-mail | : | Electronic mail |
| FAO | : | Food and Agriculture Organization of the United Nations |
| ARD | : | Agricultural and rural development |
| PDA | : | Personal Digital Assistants |
| GIS | : | Geographical Information Systems |
| M | : | Mobile Phone |
| SMS | : | Short service message |
| IVR | : | Interactive voice response |

Abstract

The mobile phone technology is an important tool to enhance farmers' access to better paying agricultural markets. The study analyses usages of mobile phone in agricultural Marketing and The mobile phone is considered as the connection of mobility and its impact on agricultural development in Bangladesh communication in social networks and in business activities especially to people in developing and transitioning countries. With its use, farmers can reduce marketing costs, containing search and transportation costs, as well as participate more easily in markets, but also gain non- market information and access to advisory service.

This study aims to investigate the impact. Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, aground food processing, distribution, advertising and sale. Some definitions would even include "the acts of buying supplies, renting equipment, (and) paying labor", arguing that marketing is everything a business does.

The study suggests the need to improve farmers' access to mobile phones for agricultural marketing. It recommends that government, in collaboration with mobile network operators, should reduce calling tariffs to enhance use, gender disparities in accessing assets should be minimized, and investment in supporting infrastructure must be enhanced.

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CHAPTER- 1

INTRODUCTION

1.1 Prelude

Information and Communication Technology (ICT) is increasingly becoming an important driver of economic growth in developing countries. These tools have become important sources of information in developing countries. Some of the most important ICT tools commonly used as information sources in many sectors of developing country economies include new generation tools such as mobile phones, internet/web-based applications (e.g., e-mails), interactive video and CD-ROM programs as well as the old generation tools namely, the radio and television. The use of these tools enhances information flow among users which enables economic agents to perform economic activities faster by improving access to timely and accurate information. Recent studies also suggest that information promotes competition and improves market performance. Access to information increases the level of transparency and trust among transaction partners which in turn improves the level of economic transactions. Thus ICT offers the potential to increase the information flow among agricultural actors hence increasing the transparency of agricultural exchange in agrarian economies such as that of Malawi. It can also facilitate knowledge sharing within and among actors in the agricultural sector such as farmers, researchers, extension service providers, traders, and exporters. An increasing number of developing country smallholder farmers have recently embraced the mobile phone technology in order to enhance their access to agricultural markets. Markets in most developing countries often failed for smallholder farmers who form the majority of agricultural producers. The failure of agricultural markets for smallholder farmers often results from lack of access to information or from the endemic problem of information asymmetry between farmers and buyers. Consequently, majority of smallholder farmers sell their produce in local low-paying markets or at the farm-gate rather than travel to distant better-paying markets. Thus the mobile phone offers smallholder farmers the potential to resolve market failure and increase market participation through access to information on available markets and prevailing market prices. The decision by farmers to adopt a new technology, such as mobile phone, is a choice between traditional and new technology. Theoretically, a farmer will adopt a new

technology if it offers greater benefits than the old technology. Farmers' decision to adopt a technology or otherwise is especially determined by the profitability of using the new technology and risks associated with it. Once a decision to adopt is made, farmers still face another hurdle which is the degree to which the new technology should be used (i.e., the intensity of use). While many smallholder farmers are turning to the use of new generation ICT tools in agricultural transactions, little is known about the factors driving this behavior. This study therefore uses the double hurdle methods to examine drivers of adoption of new generation ICT tools by smallholder farmers for agricultural marketing purposes in Malawi. In the first hurdle, it assesses the drivers of decision to adopt new generation ICT tools. The second hurdle then examines the conditioners of degree to which smallholder farmers use these tools for agricultural marketing.

1.2 Statement of the problem

Bangladesh government promotes market oriented agriculture but inefficient marketing system Hinder its progress. Among many factors affecting the performance of marketing system, unavailability of timely and relevant market information to small scale farmers is a critical one. This contributed for low productivity of the agricultural sector and poor orientation of the farmers to commercialization. Farmer do not get proper price. In this connection information and communication technology (ICT), especially use of mobile phone and Internet can help the farmers in diverse ways. Mobile phone and Internet can help farmers in getting information just on time they need, which in turn will maximize farm production. Accordingly, selling their products at a justified and fare price will develop their livelihoods in a sustainable way. The proposed research work is aimed to measure the qualitative changes on backward and forward agricultural linkages due to mobile phone uses.

1.3 Research Question

Q-1: What kinds of information are available for farmers, dealers, retailers about Agriculture marketing that they can collect by using mobile phone?

Q-2: What is the contribution of mobile phone in Agriculture marketing?

Q-3: What are the factors affecting use of mobile phone for agricultural marketing in Bangladesh?

1.4 Objective of the study

i have carried out this study to find out some key issues about mobile phone that helps to farmers in developing agricultural marketing in Bangladesh. The study mainly aims to analysis usages of mobile phone in rural agricultural marketing function in Bangladesh. To attain the main objective, the study considers the following core and specific objectives in particularly.

1.4.1 General Objective

The core objective of this study is to find out the usages of mobile phone in agricultural marketing in Bangladesh& its impact on agricultural development in Bangladesh.

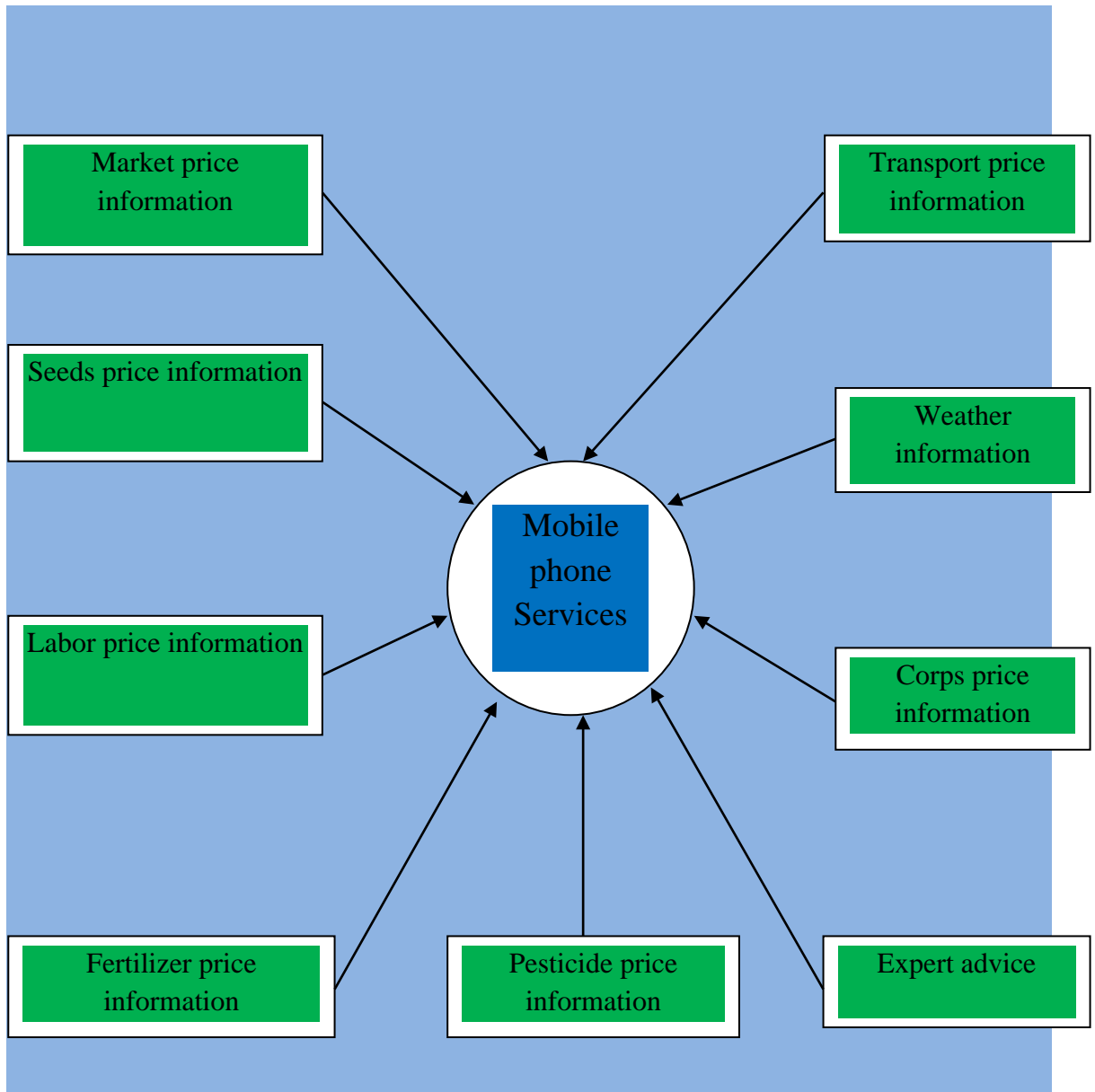
1.4.2 Specific objectives

Some specific objectives of this study are:

- a. To know about the roles of Mobile phone in rural agricultural marketing function.
- b. To identify the satisfaction and dissatisfaction level of Mobile phone usages in agricultural marketing function.
- c. To investigate the problem faced by Mobile phone usage in agricultural marketing function.

1.5 Conceptual Framework

Figure1.1: Farmer information needs that they can collect by using Mobile phone.



1.6 Definition of Key Terms

1.6.1 Mobile phone

Mobile phone is a telephone system that works without any wire. Mobile phone is one of the wonderful wonders of science. It has added a new dimension to our life and to communication system. It can be moved easily and quickly from place to place. Through mobile phone, we can send messages to distant places, play games and sports, know about time. Solve the work of calculation; be aware of different kinds of news and view. At present the popularity of the mobile phone is increasing. Many companies are also being set up for selling mobile phone. The price of mobile phones also decreasing in comparison with the past. People are being encouraged to buy a mobile-phone set at a cheaper rate. However with the touch of science and technology, the whole world seems to be a global village, in a very single moment, we can communicate with the people living in a very distant place. With all its advantages, the mobile phone has still some drawbacks in disguise. Though the price of it is decreasing, per minute bill is not decreasing. So everybody cannot possess it. Scientists have recently discovered that mobile phone can cause cancer to the users. Besides, it has become a fashion with the young people. Last but not the least; terrorists are using it to spread out terrorism all around the world. But in spite of all these disadvantages, it can be finalized here that the necessity of a mobile phone in exchanging messages cannot be denied in the true sense of the term in our practical life.

Mobile phone is such a cordless phone by which people can communicate to others immediately. It is an important medium of communication. It is one of the amazing inventions of modern science. We can communicate with the people at home and about in the shortest possible time through it. The use of mobile phone is more convenient than telephone. Especially businesspersons, service holders, doctors and other professionals use it. Though it was a sign of aristocracy in the past, now it is found in everyone's hand in our country. Today we cannot do a single bay without it. Before the invention of mobile phone communication and messaging system was very hard. Nevertheless, mobile has now lessened the distance of the world. It has brought the world to our reach. At present, one can use internet in one's mobile set and communicate with the whole world. In spite of having all these merits, mobile phone has some demerits too. The miscreants can easily commit crimes and maintain their secrecy through mobile phone. Besides, our younger generation is also getting addicted to it day by day. They are often seen talking

late night to their girlfriends or boyfriends. As a result, their health and study are hampered seriously. Mobile phone is also injurious to our health. Cosmic radiation caused by the mobile phone damages our body. It harms our brain when we talk through it. Again, the excessive use of mobile often causes fatal diseases like brain tamer, cancer etc. Children and pregnant women are forbidden to use mobile phone. So, we should be conscious in using it.

On the other hand, Farmer can easily get various types agricultural information like Weather Information, production and Cultivation Techniques, diseases and Insect Information, plant Nutrients and Water Usage, price Information, demands and Current Stock Information, educations and health Information, fertilizer and pesticide information by using mobile phone.

1.6.2 Mobile Phones as a Marketing Tool

Farmers use mobile phones to build a network of contacts and draw on this wider experience and expertise to obtain critical information more rapidly. Essentially the mobile phone, its special applications, and the Internet (although to a lesser extent currently) are becoming management tools for farmers, specifically in relation to marketing. Greater access to information seems to help farmers make better decisions around transportation and logistics, price and location, supply and demand, diversification of their product base, and access to inputs.

1.6.3 Agricultural marketing

Agricultural marketing techniques are used in every place of “agribusiness,” including small harvesting, corporate farms, as well as collectives; distributors; makers of farm tools, pesticides, and anatomical enhancements for plant life and livestock; nourish and seed dealers; and more. Agricultural marketing handles the services involved with moving an agricultural product in the farm to the patron or customer.

Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, agro- and food processing, distribution, advertising and sale. Some definitions

would even include “the acts of buying supplies, renting equipment, (and) paying labor”, arguing that marketing is everything a business does. Such activities cannot take place without the exchange of information and are often heavily dependent on the availability of suitable finance.

Marketing systems are dynamic; they are competitive and involve continuous change and improvement. Businesses that have lower costs, are more efficient, and can deliver quality products, are those that prosper. Those that have high costs, fail to adapt to changes in market demand and provide poorer quality are often forced out of business. Marketing has to be customer-oriented and has to provide the farmer, transporter, trader, processor, etc. with a profit. This requires those involved in marketing chains to understand buyer requirements, both in terms of product and business conditions.

In Western countries considerable agricultural marketing support to farmers is often provided. In the USA, for example, the USDA operates the Agricultural Marketing Service. Support to developing countries with agricultural marketing development is carried out by various donor organizations and there is a trend for countries to develop their own Agricultural Marketing or Agribusiness units, often attached to ministries of agriculture. Activities include market information development, marketing extension, training in marketing and infrastructure development. Since the 1990s trends have seen the growing importance of supermarkets and a growing interest in contract farming, both of which impact significantly on the way in which marketing takes place.

1.6.4 Agriculture and e-agriculture

Agriculture includes farming crops, animals, fishery and foresting contributions. Farming crops includes paddy, wheat, jute, vegetables, sugarcane, pulses etc; animal farming includes dairy, poultry, fishery, sericulture etc.

The main phases of the agriculture industry include crop cultivation, water management, fertilizer application, fertigation, pest management, harvesting, post-harvest handling, transport of food products, packaging, food preservation, food processing/value addition, quality management, food safety, food storage, and food marketing. All stakeholders of agriculture industry need information and knowledge about these phases to manage them efficiently. E-Agriculture is an emerging field focusing on the enhancement of

agricultural and rural development through improved information and communication processes. More specifically, e-Agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use information and communication technologies (IT) in the rural domain, with a primary focus on agriculture. And to convert agriculture into e-agriculture in a developing country like Bangladesh the mobile phone can play an important role. Because more than 80% people of Bangladesh are using mobile phone to communicate with others as well as more than 5000 million taka are transacted daily by the mobile user (According to Bangladesh Bank, the central bank of Bangladesh).

"e-agriculture" means activities and other initiatives to bridge the rural digital divide had already been underway around the world, the Community (and the term "e-agriculture") came into being after the World Summit on the Information Society in 2003 and 2005. It was clear to the WSIS global participants that when addressing the challenges that face the digital divide, especially in a rural livelihoods context, problems go beyond just technology. It is a multi-faceted problem of ineffective knowledge exchange and management of information content, as well as the lack of human resources, institutional capacity, and sensitivity to gender and the diverse needs of different groups.

With WSIS participants identifying and naming "e-agriculture" as a key action line to address the Millennium Development Goals, the Food and Agriculture Organization of the United Nations (FAO) was assigned to lead the development and subsequent facilitation activities that would truly engage stakeholders at all levels. Bringing together a group of Founding Partners in 2006, the e-Agriculture Community officially launched in 2007. Today, the e-Agriculture Community of Practice is still growing and supporting its members and the communities with which they work daily.



e-Agriculture is a global Community of Practice, where people from all over the world exchange information, ideas, and resources related to the use of information and communication technologies (ICT) for sustainable agriculture and rural development.

With over 13,000 members from 170 countries and territories, the e-Agriculture Community is made up of individual stakeholders such as information and communication specialists, researchers, farmers, students, policy makers, business people, development practitioners, and others. The members have a common interest that brings us together: improving policies and processes around the use of ICT in support of agriculture and rural development, in order to have a positive impact on rural livelihoods.

Our Mission is to serve as a catalyst for institutions and individuals in agriculture and rural development to share knowledge, learn from others, and improve decision making about the vital role of ICTs to empower rural communities, improve rural livelihoods, and build sustainable agriculture and food security.

We achieve all this by working together - with partners around the globe. e-Agriculture is all about knowledge exchange between UN agencies, governments, universities, research organizations, NGOs, farmers' organizations, private sector, and the wider community. We recognize that, in its simplest form, knowledge exchange is about starting constructive dialogue. That is why one of the most popular activities is the e-Agriculture Forum series. Topics are demand-driven, and lead by partner institutions who specialize in different areas of e-agriculture.

1.6.5 Market information

Efficient market information can be shown to have positive benefits for farmers and traders. Up-to-date information on prices and other market factors enables farmers to negotiate with traders and also facilitates spatial distribution of products from rural areas to towns and between markets.^[5] Most governments in developing countries have tried to provide market information services to farmers, but these have tended to experience problems of sustainability. Moreover, even when they function, the service provided is often insufficient to allow commercial decisions to be made because of time lags between data collection and dissemination.^[6] Modern communications technologies open up the possibility for market information services to improve information delivery through SMS on cell phones and the rapid growth of FM radio stations in many developing countries offers the possibility of more localized information services. In the longer run, the

internet may become an effective way of delivering information to farmers. However, problems associated with the cost and accuracy of data collection still remain to be addressed. Even when they have access to market information, farmers often require assistance in interpreting that information. For example, the market price quoted on the radio may refer to a wholesale selling price and farmers may have difficulty in translating this into a realistic price at their local assembly market.^[7] Various attempts have been made in developing countries to introduce commercial market information services but these have largely been targeted at traders, commercial farmers or exporters. It is not easy to see how small, poor farmers can generate sufficient income for a commercial service to be profitable although in India a new service introduced by Thomson Reuters was reportedly used by over 100,000 farmers in its first year of operation. Esoko in West Africa attempts to subsidize the cost of such services to farmers by charging access to a more advanced feature set of mobile-based tools to businesses.

1.7 Importance of the study

Bangladesh is the agricultural country in the world and agricultural marketing is the most important sector for economic development in Bangladesh. In this connection information and communication technology (ICT), especially use of mobile phone and Internet can help the farmers in diverse ways. But farmer do not get proper information about agriculture. So, Mobile phone can play an important role in agricultural development I Bangladesh. The study would investigate the use of mobile phone in agriculture marketing. The findings of this study are believed to be useful to traders and marketing agents to gain up to date information and make informed decisions. Farmer, dealer and retailer that are engaged in the development of information access in marketing sub-sector would benefit from the results of this study in order to improve the application of mobile phone for the dissemination of information in agriculture marketing. Farmer, dealer and retailer will be benefited from the result as the ground reality will suggest further interventions by different stakeholders associated with agriculture marketing like farmer, dealer and retailer.

1.8 Research Methodology

1.8.1 Nature of the study

The research is the form of descriptive design. Both qualitative and quantitative approach was used in this study.

1.8.2 Sample Size and Sampling Method

Population of the study were farmers 10(Ten), wholesalers 5 (Five), dealers5 (Five), retailers5 (Five), consumers 15(fifth ten) from two village **Raypur and Mohespur** purposively selected for the study.

1.8.3 Sources of Data

Primary data were collected from farmers, wholesalers, dealers, retailers, consumers. The secondary data had been collected from various newspapers, magazines, internet and Bangladesh Govt. websites etc. Furthermore, different working papers, journals and articles have been studied to enrich the literature of the study.

1.8.4 Tools of Data collection

The primary data for this study were collected through self-administrated questionnaire prepared by researcher. The questionnaire includes both open ended and close ended question.5 point likert scale (where, 1= Strongly Disagree; 2= Disagree; 3=Neutral; 4=Agree; 5= Strongly Agree were used in this study. Besides this secondary data were also used.

1.8.5 Data analysis Techniques

Microsoft office package like Microsoft word, Microsoft Excel, Graphical technique (such as pie chart, bar chart, percentage, etc.) have been used for summarizing and illustrating the collected data systematically.

1.9 Scope and Limitation

Most of the farmers in Bangladesh are illiterate. Most of them cannot use mobile phone or smart phone and they do not get proper price of agricultural products. For this reason they do not get e-mobile services, farmer helpline etc. agricultural services in Bangladesh. So educated farmers can easily take these services. Information is the power, which is true for all the sectors. Now a days sharing information became easier due to availability of number of communication technologies throughout the country which is also available even at remote rural villages. Vertical and horizontal sharing of information in agriculture sector will maximize farmers' knowledge regarding modern agricultural farming and marketing of their products which in turn will be reflected on their livelihoods. Farmers are primarily being benefited through using mobile phone. In addition, people involved with backward and forward agricultural supply like- middle men, whole seller, seed dealer, agricultural officer and extension worker and so many other related to agricultural value chain are also being benefited. The study was focused on assessing the contribution of mobile phone in camel marketing and identifying factors affecting use of mobile phone for camel marketing in the study area. Furthermore, it emphasized the contribution of mobile phone in market information access, price formulation and bargaining power of farmers, traders buying and selling strategies involved in camel marketing in the study area as the centre of the study. Due to time, financial and human resource constraints, the study was focused to only one selected farmer.

1.10 Layout of Thesis

The findings of the study are presented here in the form of a dissertation. The chapter outlines of the thesis are as follows:

Chapter- 1 **Introduction:** Introduction chapter includes: prelude, statement of the problem, research question, research objectives, and definition of key terms, importance of the study, and methodology of the study, scope and limitations of the study.

Chapter- 2 **Literature review:** This chapter includes a brief review of results of some previous studies which are related to the present research work and research gap found on those studies.

Chapter- 3 **Usages of mobile phone in agricultural marketing& its impacts on agricultural development:** This chapter focuses on agriculture marketing functions, agriculture marketing information, services of mobile phone in agriculture marketing information, key benefits and challenges related to mobile phones and agriculture marketing, contribution of mobile phone for making a better agriculture marketing decision – Bangladesh perspective, use of mobile phones could be beneficial for the farmers, proposed architecture of mobile phone for agriculture marketing, impact of access to time market information through mobile phones..

Chapter- 4 **Data analysis and interpretation:** This chapter includes analysis of primary data which were collected from the respondents through questionnaire.

Chapter- 6 **Findings, Recommendations and Conclusion:** This chapter includes findings, recommendations, conclusions and scope for further research.

Reference

Appendix

CHEPTAR-2

LITERATURE REVIEW

2.1 Review of Literature

Okello, J. J, Katengeza, S. P and Jambo, N (2013), in his journal entitled Use of Mobile Phone Technology in Agricultural Marketing: The Case of Smallholder Farmers in Malawi, The mobile phone technology is an important tool to enhance farmers' access to better paying agricultural markets. The study focuses on the use of mobile phone, the most widely used new generation ICT tool by households in developing countries, for agricultural marketing. The study examines the use of this tool among smallholder farmers in Malawi. It therefore specifically assesses drivers of adoption and intensity of adoption of mobile phone for agricultural marketing in Malawi. The study tests the hypothesis that capital endowments such as land create incentives for adoption of new technologies such as mobile phones in agricultural marketing. Access to information increases the level of transparency and trust among transaction partners which in turn improves the level of economic transactions ICT offers the potential to increase the information flow among agricultural actors hence increasing the transparency of agricultural exchange in agrarian economies such as that of Malawi. It can also facilitate knowledge sharing within and among actors in the agricultural sector such as farmers, researchers, extension service providers, traders, and exporters.

Hasan, M. M (Apr-2015), Showed in his research entitled Mobile Phone: An instrument of disseminating requisite agricultural information for the agricultural development of Bangladesh: a case study, usages and impacts of mobile phone and information are available for farmers. The specific objectives of the research work are: Identifying agricultural information needs of the rural Bangladeshi farmers: What are the problems faced by the rural Bangladeshi farmers with regard to production and marketing of agricultural commodities and To determine what type of agricultural information the respondents get from the mobile operators. And also to identify the farmer's initiatives to apply knowledge in their agricultural process after getting information by mobile phone. He mentioned that the concept of utilizing mobile phones to bridge information and knowledge gaps among farmers and rural service providers is based on two assumptions. The first is the near ubiquity of access and use of mobile phones. The second is that

farmers (especially in developing economies) have specific information and knowledge needs that are currently only met partially, if at all. Agriculture and farmers are correlated. The development of the farmers will ensure the development of entire agriculture. The agricultural development will largely depends on how much farmers are aware of agriculture and in what extent they get the information. At present, the various mobile operators have been disseminating the effective agricultural information through different mobile applications. As a result, farmers are getting the valuable information on agriculture. But these are not sufficient. The mobile operators should be more conscious to put on air more agricultural information based application to create the awareness among the farmers so that they can put the best effort towards the development of the agriculture which will enhance the development of the country. As a result, Bangladesh will be ahead one more step.

Hassan. M. S and Chhachhar. A. R (June 2013), in his journal entitled the use of mobile phone among farmers for agriculture development, Mobile phones have provided new approach to farmers to make tentative decisions much more easily than before. Use of mobile phones leads to greater social cohesion and improved social relationships among farmers and business community. The objectives of the research work are the usages of mobile phone in agricultural sector in Bangladesh. He mentioned that the mobile phones have provided new approaches and thinking to the farmers forget the information and sell their product in market with any bargaining to brokers. The use of mobile phones as providing agricultural related information and it was showed that how mobile phone has been able to connect the farmers to market information on the specific time and provide accurate information from brokers and customers. The farmers are one of the big communities in developing countries where they have not facilities in their area for increase their product and income. Mobile phone is increasing among farmers but still there is gap available among business, customers and farmers. There is need of enhancement different project about mobile phone technologies where farmers could get easy access to communicate with people to sell their goods in market.

Baumuller, H (May 2012), in his journal entitled Facilitating agricultural technology adoption among the poor: The role of service delivery through mobile phones, The use of mobile phones in poverty reduction and development has ignited much interest over the

past decade. To take advantage of the rapid expansion of mobile phones in developing countries, businesses, government agencies and non-governmental organizations are increasingly turning their attention to the delivery of services through mobile phones in areas such as health, education and agriculture. The objectives of the research work are the m-services could be and are already being used to facilitate agricultural technology adoption among farmers in developing countries, including accessing, using and generating income from new technologies. The paper highlights significant potential for m-services to facilitate adoption of agricultural technologies in developing countries. Service providers and m-service developers are increasingly recognizing this potential, including the business opportunities of marketing m-services to a large number of smallholder farmers. While initially m-services focused mainly on the provision of farming and market information, services are becoming more comprehensive, offering more diverse and multiple functions that support farmers at different stages of agricultural production – a trend that will need to continue to increase the effectiveness of m-services in agriculture. At the same time, it will be crucial to embed these services in complementary support programmes and infrastructure developments to address other production and market limitations that cannot be resolved through mobile phones.

Gronlund, A and Islam, S. M (2011), Showed in his research entitled Factors Influencing the Adoption of Mobile Phones among the Farmers in Bangladesh: Theories and Practices, investigates the factors influencing the adoption of mobile phone technology among farmers in Bangladesh. With its more than 160 million people, Bangladesh ranks as the eighth most populous country in the world . Out of 29 million households, 89% are situated in rural areas and 52% (15 million) account for agricultural farm households. According to the World Bank, “Poverty in Bangladesh is primarily a “rural phenomenon”, with 53 percent of its rural population classified as poor, comprising about 85 percent of the country's poor. The rate of adult literacy at national level is 49%, while it is 46 % in rural areas. As surveyed by the BBS-UNESCO, around 26% of the poorest and 34% of the poor people in the rural areas have formal literacy. This paper has explored earlier theories and models on technology adoption and diffusion and summarized them into a conceptual research model, which has not been done before so comprehensively. We have detailed and rationalized the factors by means of empirical data and studies related to rural Bangladesh. The conceptual model populated with some

factors as presented here can be useful for policy makers, service and technology designers and marketers, and researchers having particular interest to serve rural communities in developing regions. The inclusions of two new external factors – „tech-service promotion“ and „tech-service attributes“ – may be of special interest for the researchers devoted to technology acceptance and diffusion models.

Duncombe, R. (2012), in his journal entitled *Mobile Phones for Agricultural and Rural Development: A Literature Review and Future Research Directions*, provides a systematic review of the potential and the limitations of mobile phones in the delivery of rural services for agricultural and rural development (ARD) in developing countries. Evidence from published research is framed according to the design, uptake, usage and impact of mobile phone-based innovations. The aim of this review is to analyze and understand the potential and the limitations of mobile phones in the delivery of rural services for agricultural and rural development (ARD) in developing countries. This will be achieved by assessing the available evidence concerning the design, uptake, usage and impact of mobile phone-based innovations through a critical In framing the research area, there is need to move beyond the type of taxonomies that predominate in the predominantly practitioner-orientated literature and suggests mobile-based ‘solutions’ that can provide dedicated systems for mobile payments, farmers help-lines, produce traceability and tracking systems, agricultural trading platforms, etc. IDRC (2008) simply list the technologies, ranging from Geographical Information Systems (GIS) using mobile mapping and Personal Digital Assistants (PDAs) to mobile cellular, Internet and Web-based applications. Whilst useful for providing compendiums of existing initiatives, these approaches to framing mobile phones in ARD have a key drawback. Although they pay attention to prescribing broad areas of application, they are technology-led – viewing the technologies as readily available and to be picked ‘off the shelf’ rather than part of more complex and dynamic processes of rural development and transformation in service delivery.

2.2 Research gap

Agricultural information can play very important role in the development of small farmers. By using a communication technologies farmers can increase their product and their income. In the perspective of the mobile phones farmers can directly communicate with, agriculture expert, farmer helpline, buyers and customers for sell their produce in good price. The review of literature reveals that various scholars at the international level have initiated different studies on different aspects about usages and impacts of mobile phone in agricultural development in Bangladesh. But at the national level there are very few studies initiated towards green bank about usages and impacts of mobile phone in agricultural sector. Moreover, in Bangladesh there is hardly any study about usages and impacts of mobile phone in agricultural sector. The present study will be an attempt to fill this gap.

CHAPTER-3

USAGES OF MOBILE PHONE IN RURAL AGRICULTURAL MARKETING

3.1 Agricultural Marketing Functions

Agricultural marketing involves in its simplest form the buying and selling of agricultural produce. In olden days, when the village economy was more or less self sufficient, the marketing of agricultural produce presented no difficulty, as the farmer sold his produce direct to the consumer on a cash or barter basis. Agricultural marketing consists of all the functions and services used in moving the commodities from the producer to the final consumer. It includes not only the physical movement to the place where the product is wanted but also putting it into the form and amount is desired and having it ready at the time it is wanted.

Any single activity performed in carrying a product from the point of its production to the ultimate consumer may be termed as a marketing function. A marketing function may have anyone or combination of three dimensions, viz., time, space and form. The marketing functions may be classified in various ways. Thomsen has classified the marketing functions into three broad groups. These are:

3.1.1 Primary Functions:

- Assembling or procurement
- Processing
- Dispersion or Distribution

3.1.2 Secondary Functions:

- Packing or Packaging
- Transportation
- Grading, Standardization and Quality Control
- Storage and Warehousing
- Price Determination or Discovery
- Risk Taking
- Financing
- Buying and Selling

- Demand Creation
- Dissemination of Market Information

3.1.3 Tertiary Functions:

- Banking
- Insurance
- Communications – posts &
- Telegraphs
- Supply of Energy – Electricity

3.2. Agriculture marketing information

Farms In a country like Bangladesh are extremely small, cultivation is dependent on the uncertainties of variable rainfall, floods, natural disaster and political instability and average output is generally low. Addition of value in agriculture sector requires technological, institutional and price incentive changes designed to raise the productivity of the small farms. Small farmers are entangled within a vicious cycle because of sharecropping, tenancy, money lending and other structural and financial relationships with owners and traders. The situation of the vulnerable farmers is exacerbated by the land erosion, drought, flood, deforestation and other natural calamities. These together with lack of access to finance reduce farmers' propensity to take risks. The bargaining power of farmers in the input market is not very strong with the result that farmers pay high prices for inputs thereby reducing their net earnings. Lack of bargaining power also impacts adversely on the prices farmers receive for their produce. Low net earnings in turn reduce the capacity and incentive to make productivity improving investments. The reason behind all of those is the unavailability of right information at right time at the right place. Propagation of relevant information to the farming communities can facilitate the effective adoption of agricultural inputs, decision making on markets and adoption of scientific methods. However, lack of sharing of information across the agricultural supply chain is a major concern in Bangladesh. Over the years it has been found that in Bangladesh there is a strong correlation between the use of ICT mostly the mobile phones and farmers' productivity. The use of mobile phones can also increase farmers' bargaining power. By getting the access to information through mobile phones at any place at any time, small scale farmers are better able to compete with the larger operators.

They can even develop knowledge regarding crop choices, develop products for the niche markets and even can market the products directly to the consumers. If they are been deprived to get the access to knowledge and communication capabilities the small farmers remain at the mercy of the global market forces.

The information disseminated by mobile phones can be divided into several major areas, which is called as services of e- Agriculture. These are:

- Market information
- Fertilizer price Information
- Pesticide price Information
- Seeds price Information
- Farmer health Information
- Weather Information
- Production and Cultivation price Information
- Diseases and Insect price Information
- Plant Nutrients and Water Usage
- Demands and Current Stock Information
- Educations and Health Information
- Middle man, broker Information

To make this information available the leading mobile phone operators of Bangladesh like Grameen Phone, Banglalink established call centre, providing agriculture information through their large mobile network to all over the country for target people. But still there are lots of challenges among those one of the primary challenges of disseminating requisite information to the farmers in Bangladesh is the absence or limited presence of expert consultation in rural vicinities. Some other challenges like many other domains, agricultural knowledge becomes outdated quite quickly and it is often hard to regularly train extension agents working in the field with up-to-date information. Moreover, currently there is no specific mechanism in place to regularly train extension agents after a certain interval in a proper learning environment. In addition, in the field extension agents are not equipped with any sort of tool or materials that can be used to improve their service delivery.

Another major challenge is that the decision-makers have limited tools to collect real time information from the field when taking timely decisions. Extension agents in the field collect and prepare a massive amount of ground level data, such as crop statistics and visit log, which is vital for managers and decision makers in order to plan future activities. Currently data collection is done through a traditional paper-based system, and therefore aggregating all the data collected requires a big amount of staff time. Hence, when it comes to management level, which is far from the ground, it often takes more than fifteen days to elaborate data from the fields, and this means that decision makers have very little time to send out meaningful and effective instructions in emergency situations such as floods and other natural hazards.

To solve these three specific issue, mPower Social Enterprises Ltd of Bangladesh has developed an integrated ICT approach which includes a big amount of mobile and web apps, multimedia content for mobile phones, and even community radio programs. To solve the very first issue, the lack of extension agents, mPower has developed a community based, infomediary driven approach. In each of the farmer group, the community selects an „ICT Leader“, a member of their community who owns a Smartphone. These ICT leaders are trained by the project and they are provided with a mobile application named „Farmer Query System“. Fig-1 shows when farmers in the community face a particular agriculture challenge, through this app the ICT Leaders send the details of this problem to a call center where expert agriculturists respond to the query through a phone call, becoming a virtual extension agent. Moreover, female farmers are also more prone to get reliable and certified agricultural information as the person who is sending the query on her behalf is community member himself. Agriculture Knowledge Bank, an online repository of agricultural content which can also be accessed through mobile app, has been developed in collaboration with various government research institutes and extension department of Bangladesh in order to solve the challenge of updating the extension agent with most recent knowledge. Many research agencies in Bangladesh produce a lot of content which is stored in their own website. Existing rural telecenters, innovative farmers or extension agent who tries to use ICT or mobile web to extract information from web, often face a hard time because for a single piece of information they often have to roam through multiple government website

3.3 Services of Mobile phone in agricultural marketing information

Mobile phones have been spreading fast among farmers and they are exchanging their marketing, weather and business information among each other. Farmers directly contact markets brokers and near cities for sell their product. Similarly farmers focus, search useful and up-to-date market information from social and business networks (Ilahiane, 2007). It could prove that mobile phone was very powerful tool in providing basic information about agriculture. For instance in Malaysia mobile line companies such as DIGI, CELCOM, MAXIS and U-MOBILE, could provide new direction and approach to farmers for communicating with market and agriculture extension officers to get information about latest market rates as well as weather information. One extension programme was started in Philippine about use of mobile phone for farmers to get information about deliver fertilizer advice by text message over mobile phones which were given a positive result to the farmers and they enhanced their production. Similarly in Bangladesh farmers obtain information about costs of seeds, fertilizers and pesticides of growing crops against bad weather by using mobile phone that link solar powered weather stations to an insurance company. The most important and significant improvement were occurred in Bangladesh where farmers get fertilizers and certified seeds is being delivered through the use of mobile phone.

In the perspective of economic development mobile phone has effect on low income groups. Mobile phones have vital impact on agriculture where the use of mobile phone among poor farmers in developing countries could unexpected. The most vital aspect the mobile phone was the information about the market that was in past were very difficult for small farmers to obtained. Nowadays mobile phone has provided producers with information and knowledge on the correct market price, quantities, and availability of a particular product and technical advice. It could enable the producer to have direct communication with the buyer and to avoid the costs associated with intermediaries.

The study was conducted in Tanzania where the organization deployed the farmers which was called market spies near cities to inform about the latest price of the product and its availability in market by mobile phone. This strategy improved the market access and provided a good profit to the farmers. Such kind of awareness were changed the market trends and given anew opportunities to farmers. The first mobile project was established

in Tanzania to bring farmers, buyers for learn about develop strategies and share their knowledge and experience to meet their identified needs. The mobile phone provided new trend among farmers to work together and sharing their experience and develop a better way for increase their income.

The importance of access, accurate and timely information could provide a good benefit and enhance the capacity of the farmers. In the terms of community development mobile phone has played a positive impact on poor farmers and their communities and mobile phone strengthen their position in the market chain. Mobile phone has provided access to facilitate active citizen participation in development. The mobile phones could help the farmers as well as traders to sell their fresh product in market quickly to avoid waste. This technology has also provided new approach and chance to farmers decide whether to accept the price offered by buyers by obtaining price information from other sources. Farmers' rate is expected to increase as information flow increases due to mobile phone network coverage and the size of the impact is large in remote areas. When the mobile phone network was not available in Ghana traders were spent many day to fill the trucks of banana and bear the transport charges and could not get appropriate price from market. Now mobile phone has not only saved the transport charges of traders and farmers, but sometime provide fresh banana in market and get good price.

The mobile phones have provided new approaches and thinking to the farmers forget the information and sell their product in market with any bargaining to brokers. Before the mobile phones mostly farmers were depend on broadcasting media such as radio and television to get knowledge and information about crops. This time mobile phone technology has given quick communication and approach to community with their community.

The educated farmers use short service message (SMS) to get latest update agricultural information such as marketing information that facilitate the farmer about making logical decisions.

The use of mobile phones as providing agricultural related information and it was showed that how mobile phone has been able to connect the farmers to market information on the specific time and provide accurate information from brokers and customers. The effect of mobile phone could measure in the term of increased or decreased their sell productivity.

The importance of market information for the farmers could not deny for the economic and efficiency development. It was observed that mobile phones have provided timely

and accurate information and by these farmers has increased their performance knowledge. Mobile phone has provided new opportunities and access to farmer's indifferent ways to communicate with market people and get latest information about commodities. It is no doubt that radio and television was also played an important role in diffusing information among different rural communities. Traditional media and new ICT have played a major role in diffusing information to rural communities.

The pre- paid mobile system has also give new directions to farmers and they use text message to their customers for sell their product in good price mobile phones have saved the time, money and energy of farmers. Mobile phone technology has closed the distance and farmers get most important information within a time without any problems.

3.3.1 Market price information (commodity prices and stocks information)

Market price information, or market intelligence, is the most commonly offered content service in Bangladesh. Farmers can easily get market price information by using mobile phone. Mobile phone networks of people collecting, organizing and delivering information related to prices and stocks of agricultural produce. The intended audiences include farmers, traders, merchants and others involved in the agricultural value chain. The information flow is unidirectional in the basic form of service where transactions are supported. Much study has shown that such systems provide farmers with a better economic return.

In Bangladesh Sugar & Food Industries Corporation under the Ministry of Industries uses the SMS format to transact purchase orders of sugarcane to growers. The Department of Agricultural Marketing under the Ministry of Agriculture disseminates price and commodity information through its Web site. Banglalink, a mobile network operator, runs a call centre for agricultural market-based information.

3.3.2 Meteorological Information

Weather-related information is important for farmers in Bangladesh. Bangladesh agriculture mostly depends on natural Weather like rains. Now a day's Farmers can easily get Weather-related information by using mobile phone.

In Bangladesh weather forecasts are provided at a district level, which are not always well suited to making informed decisions at a local level, considering weather patterns can vary within relatively small geographic areas. Localized weather stations at the village level could generate highly localized weather information and forecasts, but this would be an extremely challenging service to establish and maintain.

3.3.3 Advisory services: Time-bound Interventions

Agricultural advisory services based on crop life cycles and crop calendars form another commonly offered information service delivered using mobile phones. A specific mobile telephone account/number is identified with a particular crop for a season, and regular advisory notices related to watering, fertilizer or pesticide application are disseminated through that number. This is effective only in instances in which there is a regularity and value in keeping to certain timetables and taking certain action at a specific time. These are predominantly unidirectional SMS-based services, but in some instances the advisory notices are voice-based, with an automated call delivering a pre-recorded message to the subscriber. These messages are also sent to government officials who are associated with farmers in those particular areas.

3.3.4 Advisory services: Technical information

One of the most challenging information services is the real-time advisory for agriculture. Many public and private institutions have invested heavily in creating efficient, real-time advisory systems. The creation of a comprehensive knowledge bank and the availability of qualified agricultural officers to address farmers' queries constitute a heavy investment at the onset but in the long run they reduce costs and increase efficiency. The knowledge bank can also be accessed by farmers and extension workers in the field to support their diagnosing of problems or decision-making. The following were cited during the workshop discussion as examples of such systems.

In Bangladesh Ministry of Agriculture employs SMS and interactive voice response (IVR) systems to offer agricultural advice. In the private sector, Banglalink and Grameen Phone have each established their own call centres to address farmers' queries.

3.3.5 Early warning systems (natural disasters)

Information is the key to preparedness; for agriculture, this could mean the difference between a successful or a failed harvest. Many effective models of early warning and disaster information systems to mitigate risks are found around the world, especially for natural disasters, such as tsunami, flood and earthquake warnings. In many instances, combined information advisories culled from very localized information received from people in close vicinity to an event is used to generate information/warning services. One of the most effective ways to disseminate such information is through the use of SMS. However, the challenge of using various language character sets in certain mobile handsets remains a problem.

Another information service delivered through mobile phones relates to pest and disease control. Mobile phones now provide an excellent delivery medium to disseminate important information to a wider audience in a short time. There have been many instances in which the mobile phone service has been used to track pest or disease outbreaks and to report specifics back to a central point that then sends out alerts or arranges for preventive action as the situation demands. Other examples include information on avian flu, wild fire and a weather conditions warning system used in Bangladesh for farmers and fishers and the

Center for Environment and Geographical Information Services in Bangladesh that delivers flood-related information through SMS. The FAO Avian Influenza Information system (see Annex I) developed and implemented in Bangladesh is yet another example of how mobile technology contributes to active surveillance in resource-deficient situations. The real-time inter actions to track the spread of the HPAI–H1N1 virus in Bangladesh, where the majority of poultry farms are in rural areas and not readily accessible to the national veterinary services due to the shortage of human as well as material resources, is an excellent example of the use of mobile technology for an early warning and disaster information system.

3.3.6 Traceability in agriculture

Agricultural producers are increasingly interested in adhering to food safety standards and in facilitating food traceability. This increases the effectiveness of identifying the source of an outbreak of a food-borne illness, to trace its path and to remove it from the supply chain

3.3.7 Fertilizer and pesticide price information

Information related to the availability of a fertilizer, pesticide or even such input services as transporters or harvesters is crucial for agriculture. The Bangladesh Government Information Center provides such a service, connecting the caller to an information service provider. This particular service is based on dialogue and accessible to fixed-line and mobile telephones, but similar directory services are also offered over the Internet.



3.3.8 Specialized information

Bangladesh's Department of Agricultural Extension sends administrative messages via SMS to field-based extension officials.

3.3.9 Data gathering

Mobile phones are not only used as a delivery medium but also as a node to collect data, which is then processed by a centralized unit to produce information services. Examples include the Avian Influenza Preparedness and Response Project in Bangladesh and a system in the Bangladesh for price and stock information gathering by the Bureau of Agricultural Statistics.

Generally, the limitations of mobile phone displays in terms of size and text based systems restrict the collection of advisory types of information. However, text used in combination with voice-based information seems to offer effective options for an advisory information exchange.

3.4 Key benefits and challenges related to mobile phones and agricultural marketing

Mobiles are being used to help raise farmers' incomes, making agricultural marketing more efficient, lowering information costs, reducing transport costs, and providing a platform to deliver services and innovate. Whether the potential of these trends can be realized more widely, especially in rural areas and in an equitable way, is uncertain. Every aspect of the technology is changing rapidly; the public sector, private sector, and private citizens are constantly experimenting with new applications for it; and governments are grappling with any number of strategies to ease the digital divide. This note summarizes what is known so far about the benefits, challenges and enabling factors associated with mobile phones in relation to several aspects of agricultural marketing.

3.4.1 Helping Farmers Raise Their Incomes

In some instances, access to mobile phones has been associated with increased agricultural income. A World Bank study conducted in the Bangladesh found strong evidence that purchasing a mobile phone is associated with higher growth rates of incomes, in the range of 11–17 percent, as measured through consumption behavior (Labonne and Chase 2009). One reason for this finding is that farmers equipped with information have a stronger bargaining position within existing trade relationships, in addition to being able to seek out other markets. A study of farmers who purchased mobile phones in Morocco found that average income increased by nearly 21 percent (Ilahiane 2007).

3.4.2 Making Agricultural Marketing More Efficient

At a fundamental level, markets are about distributing information. They do so through prices, which serve as a unifying signal to participants to allow for the coordination of dispersed producers and consumers. Underlying this powerful mechanism, though, is the assumption that everyone knows the market prices for commodities, which is not the case in much of the developing world. Farmers have little information about market prices in urban areas of their own countries, let alone internationally. The result of this information asymmetry is price dispersion—the same goods sell for widely different prices in markets merely a few kilometers apart. Mobile phones, in addition to other ICTs, can overcome this problem by informing both producers and consumers of the prices offered for

agricultural products in various locations. A number of studies have shown that when mobiles are introduced to farming communities that previously lacked any form of connectivity, prices unify as farmers learn where they can sell for a better price. (See Module 9 for more information on marketing through ICTs.)

3.4.3 Lowering the Costs of Information

The most obvious and cross-cutting way that mobile phones can improve agriculture is by improving access to information and making it less costly to obtain. In many rural areas, the arrival of mobile coverage is a radical change in the nature of the information ecosystem. Although simply having more information is not sufficient to make advantageous decisions (other resources may be needed to implement them), it is a necessary step toward access to knowledge. Transaction costs are present throughout agricultural value chains, from initial decisions about whether and what to plant, to all of the operations during the growing cycle, harvesting, postharvest and processing operations, and selling (to intermediaries, consumers, processors, exporters).

3.4.4 Reducing Transport Costs

Mobile phones may help users to substitute phone calls for travel. Where safety standards are minimal, roads are in disrepair, and distances are great, substituting phone calls for travel reduces farmers' time and cost burdens. Time savings are important for agricultural households, because many crops have extremely time-sensitive and labor-intensive production cycles. Farmers who use mobiles can also save on transport costs (Overa 2006)—an effect that is stronger the more rural the area (Muto and Yamano 2009).

3.5 Contribution of mobile phone for making a better agricultural marketing decision – Bangladesh perspective

Agriculture is a major source of income and employment in Bangladesh, and improving production is an important component of poverty alleviation. Technology whether in the form of new crops, improved breeds of animals, or changes in agricultural practices and crop choice has the potential to improve agricultural production by sharply increasing yields, reducing crop spoilage and risk, and improving the nutritional quality of food.

Mobile phones are more appropriate to deliver content for customized, timely information

farmers, dealers, retailers and associated with agricultural marketing. Increase in convenience and cost savings from using their mobile phones as basic communication devices to seek information. The broad categories of information required by farmers, irrespective of their location and crops can be categorized as know-how, which helps a farmer with fundamental information such as what to plant and which seed varieties to use; contextual information such as weather, best practice for cultivation in the locality; and market information such as prices, demand indicators, and logistical information.

3.6 Use of mobile phones could be beneficial for the farmers

The majority of Bangladesh's population still lives in rural areas, and agriculture continues to be the backbone of Bangladesh's economy. Development of rural regions, and especially the agriculture sector, is important for Bangladesh's economy. Effective mobile phone based programs focusing specifically on agriculture and production can help achieve these benefits.

But majority farmer have no mobile phone or they do not use mobile phone properly and they cannot benefit of mobile phone in this modern age. Although majority of farm households owned a mobile phone, they were not widely used to obtain market information. A majority of farmers in the two countries own mobile phones, but only about one-quarter of owners used it to gather market information. Households owning mobile phones tended to have more members, higher income, and more education than households not owning the phone. Therefore, there is potential to increase the use of mobile phones during the sale process of agricultural products.

The benefits of using mobile phones in agricultural marketing will be obtained by comparing the baseline results and end line results in each country.

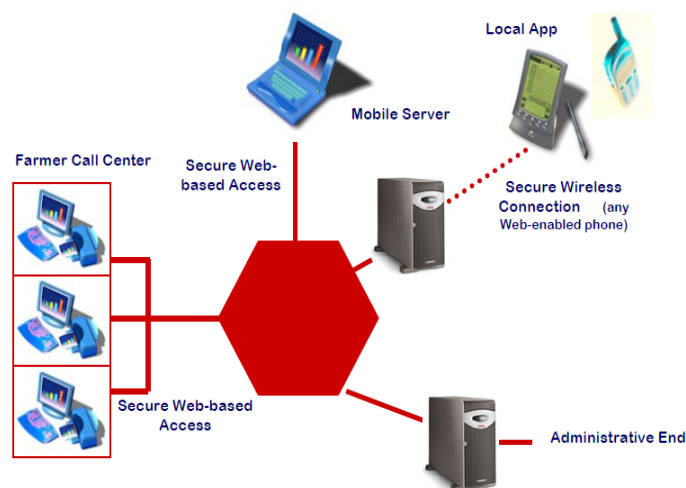
- Mobiles making agricultural marketing more efficient and providing a platform to deliver services.
- Mobiles making agricultural marketing more efficient and providing a platform to deliver services.

- To empower poor farmers with information and communication assets and services that will increase their productivity and incomes as well as protect their food security and livelihoods.
- Phone calls and SMS can also replace the need for face-to-face interactions thereby reducing travel costs.
- Mobile phones can bridge existing information asymmetry and complementing the existing information sources such as radio, television and newspapers.
- Mobile phones have the potential to significantly reduce communication and information search costs.

3.7 Proposed Architecture of Mobile Phone (ICT) for agriculture marketing

The general architecture of the proposed system is shown in Figure 3. The main component of the architecture is database server, which contains all the information that be provided. Now the way to access the information may be different based on the stakeholders. Farmers information system is a place connected with the central database and ready to provide information over mobile. A mobile server which is connected with the central database to provide information over mobile application. The application resides in the mobile server which eventually inherits information from the database server. A secured web-based system connected directly with the database server enables user to access the information over internet. An administrative end will be responsible for insert, delete, modify and update the information.

Figure-3.1: Proposed Architecture of Mobile Phone (ICT) for agriculture



3.8 Impact of Access to Time Market Information through Mobile Phone

Mobile phone use was found to have greater impact when travel costs were higher for markets that were more remotely located and unconnected by paved roads, similarly estimate the impact of mobile phones on agricultural markets in Bangladesh, focusing on farmers' market participation rather than market efficiency.

Bangladesh government promotes market oriented agriculture but inefficient marketing system hinders its progress. Among many factors affecting the performance of marketing system, unavailability of timely and relevant market information to small scale farmers is a critical one. This contributed for low productivity of the agricultural sector and poor orientation of the farmers to commercialization. The following are some of the major impacts that come as a result of establishments of farmers' market group network through mobile phone system.

Sources and places of market information have been changed. Since farmers communication and linkage broadened the source and place from which farmers access for decision making in selling and buying has been changed.

- New and short market channel has been created by farmers as a result of unnecessary and costly brokers' removal from the buying and selling system as well as due to the efforts by farmers in linking themselves to direct buyers at market places or at farm. Power and involvement of middle men in transaction making reduced and cut.
- The majority of farmers' production pattern has changed. They started to produce which they learnt have steady and high market demand which is an indication that farmers have started to follow market oriented agricultural production.
- Group dynamics has been improved between farmers. Farmer's networking within the group has been improved.
- Decision pattern of farmers changed to make more precise amount and timing possible at home before embarking for the market. This has contributed in reducing market costs. Information of more market places is used for decision making. Farmers have started to make a choice on where, what and when to sale their produce. More information helped farmers to develop better bargaining power.

- Farmers have started to pool their commodity especially seed producers and sale in group.
- Connection and input flow among other farmers' market group has been established.
- The interaction is facilitating the agricultural input flow such as seeds among farmers and is contributing in improving agricultural extension services for farmers by farmers. It also makes trade fast, less costly and less risky.
- Marketing costs has been reduced-extra transpiration costs have been eliminated, risk of not selling their produce has been reduced. In addition, communication costs in terms of time spent travelling, and the opportunity cost of income forgone when travelling have been reduced.
- Some group members motivated and purchased the mobile device for themselves.

On the top of using mobile phones for agricultural marketing, farmers are using it for improving their access to health extension service in the rural areas.

CHAPTER-4

DATA ANALYSIS AND INTERPRETATIONS

4.1: Demographic profile of the respondents

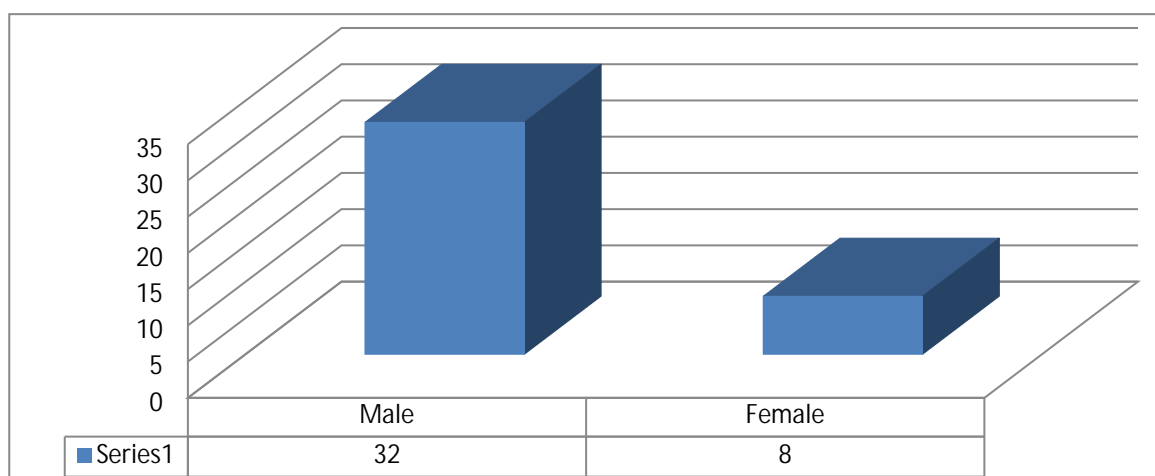
Table-4.1
Gender distribution of the respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------|-----------|---------|---------------|--------------------|
| Valid | Male | 32 | 80.0 | 80.0 | 80.0 |
| | Female | 8 | 20.0 | 20.0 | 100.0 |
| | Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Chart 4.1

Gender distribution of the respondents



Interpretation: From Table-4.1, high percentages of the respondents (80%) were male, while female constituted about 20% of the population. This implies that 80% male associated with the profession Farmer, whole seller, retailer, dealer and consumer of the respondents.

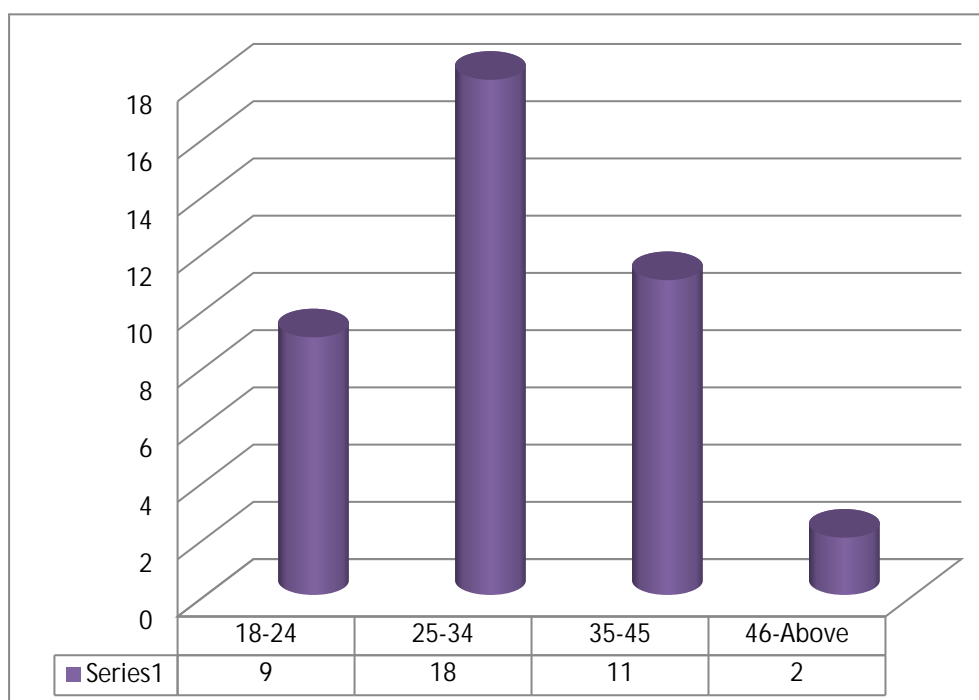
Table-4.1
Age distribution of the respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | 18-24 | 9 | 22.5 | 22.5 | 22.5 |
| | 25-34 | 18 | 45.0 | 45.0 | 67.5 |
| | 35-45 | 11 | 27.5 | 27.5 | 95.0 |
| | 46-Above | 2 | 5.0 | 5.0 | 100.0 |
| | Total | 40 | 100.0 | 100.0 | |

Source: Field Survey,2016.

Chart 4.2

Age distribution of the respondents



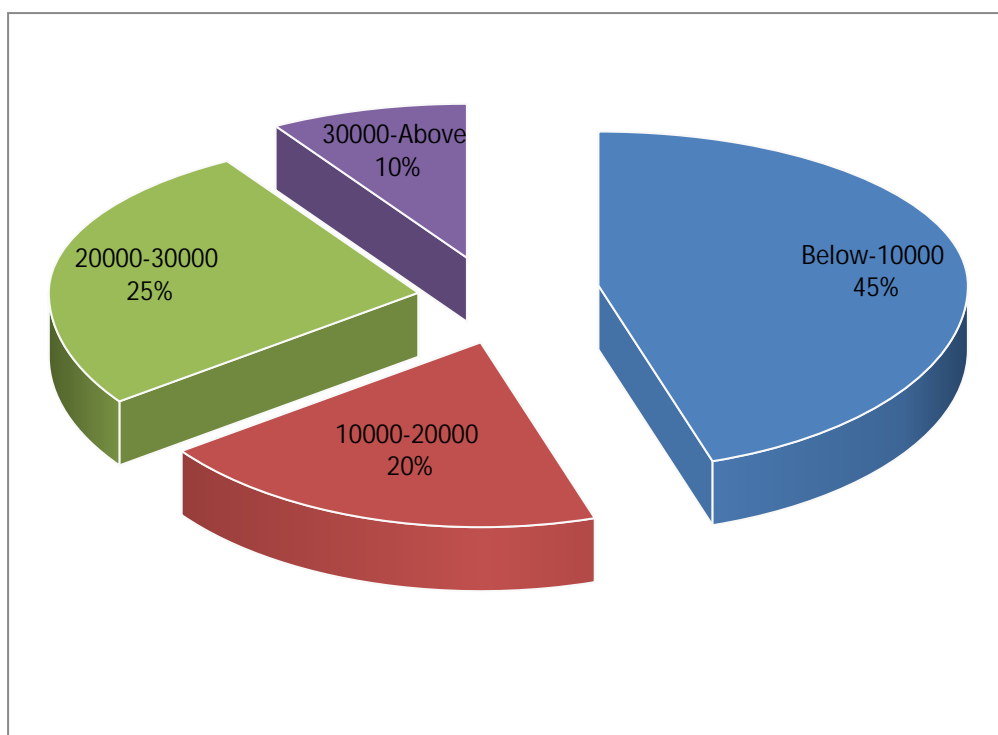
Interpretation: From Table-4.1, the age distribution of farmers in the study area reveals that majority of the respondents 45% fell in the age group of 25-34 years, about 27.5% were between 35-45years, 22.5% between 18-24 year while 5.0% above 46 years.

Table-4.3
Profession of the respondents

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| Valid Farmer | 10 | 25.0 | 25.0 | 25.0 |
| Whole seller | 5 | 12.5 | 12.5 | 37.5 |
| Dealer | 5 | 12.5 | 12.5 | 50.0 |
| Retailer | 5 | 12.5 | 12.5 | 62.5 |
| Consumer | 15 | 37.5 | 37.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey,2016.

Chart 4.3
Profession of the respondents



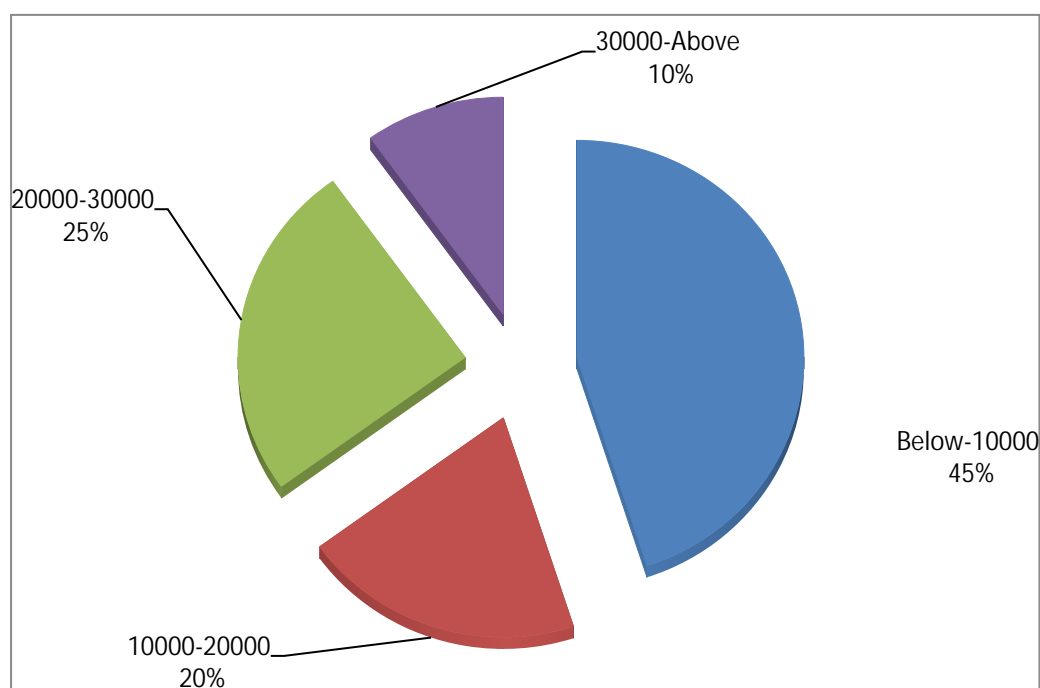
Interpretation: From Table-4.3, 37.5% of the respondents were Consumer as their major occupation while 25.0% of the respondents were Farmer and 12.5% were the profession of seller, Dealer and Consumer

Table-4.4
Education level of respondents

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------|-----------|---------|---------------|--------------------|
| Valid Below S.S.C | 25 | 62.5 | 62.5 | 62.5 |
| H.S.C | 4 | 10.0 | 10.0 | 72.5 |
| Graduate | 8 | 20.0 | 20.0 | 92.5 |
| Post Graduate | 3 | 7.5 | 7.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Chart 4.4
Education level of the respondents



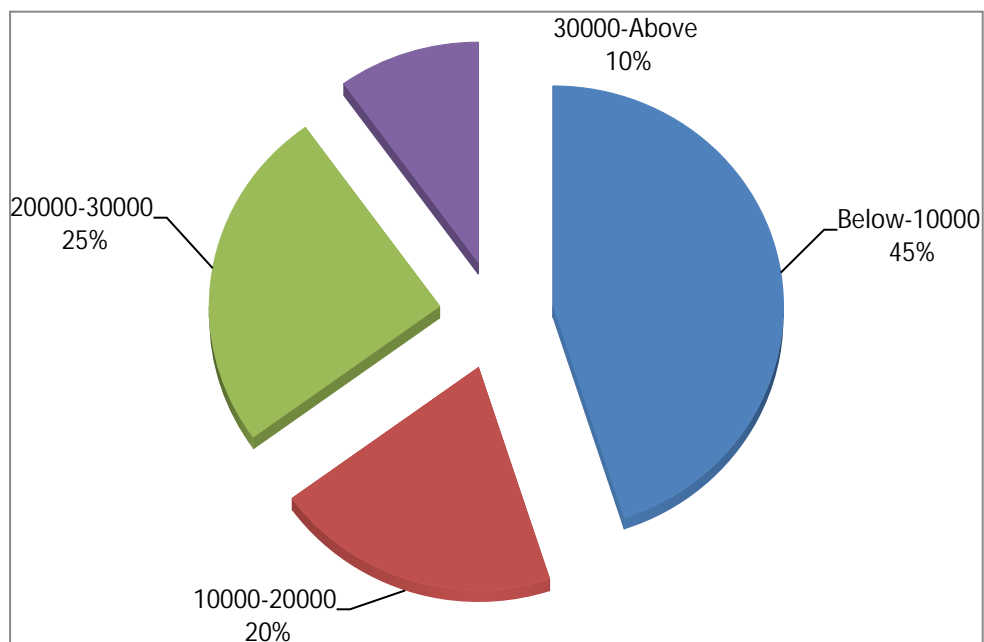
Interpretation: From Table-4.4, 62.5% had Below S.S.C education; 20.0% of respondents had Graduate. The respondents that had H.S.C education were 10.0%, 7.5% had Post Graduate education. This indicates that majority of the respondents were Below S.S.C which will not make communication and interaction easy during dissemination of agricultural information.

Table-4.5
Income level of the respondents

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------|-----------|---------|---------------|--------------------|
| Valid | Below-10000 | 18 | 45.0 | 45.0 | 45.0 |
| | 10000-20000 | 8 | 20.0 | 20.0 | 65.0 |
| | 20000-30000 | 10 | 25.0 | 25.0 | 90.0 |
| | 30000-Above | 4 | 10.0 | 10.0 | 100.0 |
| | Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Chart 4.5
Income level of the respondents



Interpretation: From Table-4.5, the Income level of respondents in the study area reveals that majority of the respondents (45%) fell in the group of Below-10000, about 25.0% were between 20000-30000, 20.0% between 10000-20000 while only 10.0% were 30000-Above.

4.2 Role of Mobile Phone in rural agricultural marketing function

This data analysis and interpretation about role of Mobile Phone in rural agricultural marketing function. How did mobile phone play roles in rural agricultural marketing function? What services were collected from Mobile Phone about rural agricultural marketing function by farmers, wholesalers, dealers, retailers and consumers?

Agricultural Marketing Information

Table 4.6
Agricultural Marketing Information

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 2 | 5.0 | 5.0 | 5.0 |
| Disagree | 1 | 2.5 | 2.5 | 7.5 |
| Agree | 15 | 37.5 | 37.5 | 45.0 |
| Strongly Agree | 22 | 55.0 | 55.0 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: Table-4.6 show that 55.0% respondent expressed strongly agree that they can collect agricultural information by using mobile phone. On the other hand, 37.00% respondents expressed agree, 2.5% disagree and 5.0% strongly disagree. This indicates that majority of the respondents believed that they can collect agricultural information by using mobile phone.

Weather Information

Table-4.7
Weather Information

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 6 | 15.0 | 15.0 | 15.0 |
| Disagree | 2 | 5.0 | 5.0 | 20.0 |
| Neutral | 7 | 17.5 | 17.5 | 37.5 |
| Agree | 17 | 42.5 | 42.5 | 80.0 |
| Strongly Agree | 8 | 20.0 | 20.0 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: From table-4.7, majority of the respondents (42.5%) fell in the group of agree they can collect weather information by using mobile phone., about 20.0% were strongly agree, 17.5% were neutral while 15.0% were strongly disagree and only 5.0% were disagree .

Fair market price

Table-4.8
Fair market price

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 2 | 5.0 | 5.0 | 5.0 |
| Disagree | 5 | 12.5 | 12.5 | 17.5 |
| Neutral | 1 | 2.5 | 2.5 | 20.0 |
| Agree | 17 | 42.5 | 42.5 | 62.5 |
| Strongly Agree | 15 | 37.5 | 37.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: Table-4.8 show that 42.5% respondent expressed agree that mobile phone helps to get fair market price of agricultural products. On the other hand, 37.5% respondents expressed strongly agree, 12.5% disagree and 5.0% strongly disagree and only 2.5% were neutral.

4.3 Determination of satisfaction and dissatisfaction level of Mobile phone usages in agricultural marketing function

This data analysis and interpretation about determination of satisfaction and dissatisfaction level of Mobile phone usages in agricultural marketing function. How did mobile phone satisfied to farmers, wholesalers, dealers, retailers and consumers by providing information about rural agricultural marketing function? What services were satisfied from Mobile Phone about rural agricultural marketing function by farmers, wholesalers, dealers, retailers and consumers?

Collect Labor by using Mobile phone

Table-4.9
Collect Labor by using Mobile phone

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid Disagree | 3 | 7.5 | 7.5 | 7.5 |
| Neutral | 5 | 12.5 | 12.5 | 20.0 |
| Agree | 22 | 55.0 | 55.0 | 75.0 |
| Strongly Agree | 10 | 25.0 | 25.0 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: From table-4.9, majority of the respondents (55.0%) fell in the group of agree they collect labor by using mobile phone, about 25.0% were strongly agree, 12.5% were neutral while 7.5% were disagree.

Market Price Information

Table-4.10
Market Price Information

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Strongly Disagree | 2 | 5.0 | 5.0 | 5.0 |
| Disagree | 2 | 5.0 | 5.0 | 10.0 |
| Neutral | 1 | 2.5 | 2.5 | 12.5 |
| Agree | 12 | 30.0 | 30.0 | 42.5 |
| Strongly Agree | 23 | 57.5 | 57.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: Table-4.10 show that 57.5% respondent expressed strongly agree that mobile phone helps to get market price information of agricultural products. On the other hand, 30.0% respondents expressed agree, 5.0% disagree and 5.0% strongly disagree and only 2.5% were neutral

Faced losses due to wrong information

Table-4.11
Faced losses due to wrong Information

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|--------------------|
| Valid Highly Dissatisfied | 4 | 10.0 | 10.0 | 10.0 |
| Dissatisfied | 2 | 5.0 | 5.0 | 15.0 |
| Neutral | 5 | 12.5 | 12.5 | 27.5 |
| Satisfied | 7 | 17.5 | 17.5 | 45.0 |
| Highly Satisfied | 22 | 55.0 | 55.0 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: From table-4.11, majority of the respondents (55.0%) fell in the group of highly satisfied that they faced losses wrong information by using mobile phone, about 17.5% were satisfied, 12.5% were neutral while 10.0% were highly dissatisfied and only 5.0% were dissatisfied.

Reduce Transportation Cost by using mobile phone**Table-4.12****Reduce Transportation Cost by using mobile phone**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|-----------------------|
| Valid Highly Dissatisfied | 4 | 10.0 | 10.0 | 10.0 |
| Dissatisfied | 9 | 22.5 | 22.5 | 32.5 |
| Neutral | 8 | 20.0 | 20.0 | 52.5 |
| Satisfied | 12 | 30.0 | 30.0 | 82.5 |
| Highly Satisfied | 7 | 17.5 | 17.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: Table-4.12 show that majority of the respondents 30.0% fell in the group of satisfied that they can reduce transportation cost by using mobile phone, about 17.5% were highly satisfied, 20.0% were neutral while 10.0% were highly dissatisfied and only 22.5% were dissatisfied.

Mobile phone helps to increase communication with global agricultural products market

Table-4.13

Mobile phone helps to increase communication with global agricultural products market

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|--------------------|
| Valid Highly Dissatisfied | 8 | 20.0 | 20.0 | 20.0 |
| Dissatisfied | 11 | 27.5 | 27.5 | 47.5 |
| Neutral | 7 | 17.5 | 17.5 | 65.0 |
| Satisfied | 7 | 17.5 | 17.5 | 82.5 |
| Highly Satisfied | 7 | 17.5 | 17.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: From table-4.13, majority of the respondents 27.5% fell in the group were highly dissatisfied and 20.0% were dissatisfied that mobile phone did not help to increase communication with global agricultural products market, about 17.5% were satisfied, 17.5% were highly dissatisfied and they believed that mobile phone helped to increase communication with global agricultural products market and only 17.5% were neutral.

Faced problem if mobile phone network is collapsed**Table-4.14****Faced problem if mobile phone network is collapsed**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|--------------------|
| Valid Highly Dissatisfied | 11 | 27.5 | 27.5 | 27.5 |
| Dissatisfied | 7 | 17.5 | 17.5 | 45.0 |
| Neutral | 12 | 30.0 | 30.0 | 75.0 |
| Satisfied | 2 | 5.0 | 5.0 | 80.0 |
| Highly Satisfied | 8 | 20.0 | 20.0 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: Table-4.14 show that majority of the respondents 30.0% fell in the group of neutral, 27.5% were highly dissatisfied and were dissatisfied that they did not face problem if mobile phone network is collapsed. On the other hand, about 20.0% were highly satisfied and 5% were dissatisfied that they Faced problem if mobile phone network is collapsed.

Mobile phone increases demand of agricultural products**Table-4.15****Mobile phone increases demand of agricultural products**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------------------|-----------|---------|---------------|--------------------|
| Valid Highly Dissatisfied | 11 | 27.5 | 27.5 | 27.5 |
| Dissatisfied | 7 | 17.5 | 17.5 | 45.0 |
| Neutral | 11 | 27.5 | 27.5 | 72.5 |
| Satisfied | 6 | 15.0 | 15.0 | 87.5 |
| Highly Satisfied | 5 | 12.5 | 12.5 | 100.0 |
| Total | 40 | 100.0 | 100.0 | |

Source: Field Survey, 2016.

Interpretation: From table-4.13, majority of the respondents 27.5% fell in the group were highly dissatisfied and 17.5% were dissatisfied that mobile phone did not help to increase demand of agricultural products, about 15.0% were satisfied, 12.5% were highly dissatisfied and they believed that mobile phone helped to increase demand of agricultural products and 27.5% were neutral.

4.4 Problem faced by Farmer, dealer, whole seller, retailer and consumer

This data analysis and interpretation about Problem faced by Farmer, dealer, whole seller, retailer and consumer. What types of problem were faced by using Mobile Phone in rural agricultural marketing function by farmers, wholesalers, dealers, retailers and consumers?

Table-4.16

Problem faced by Farmer, dealer, whole seller, retailer and consumer

| Sl. No | Name of the problem | Frequency | Percentage |
|--------|--------------------------------------|-----------|------------|
| 1 | Transportation problem | 30 | 75.00% |
| 2 | Information problem | 33 | 82.50% |
| 3 | Cost increase | 25 | 62.50% |
| 4 | Network problem | 20 | 50.00% |
| 5 | Illiteracy problem | 23 | 57.50% |
| 6 | Unwillingness to use | 32 | 80.00% |
| 7 | Misinformation of buying and selling | 36 | 90.00% |
| 8 | Difficulty in use | 32 | 80.00% |
| 9 | Uncertainty about Demand | 38 | 95.00% |
| 10 | Decrease of face value | 37 | 92.50% |

Source: Field Survey, 2016.

Interpretation: From table-4.13, Most of the farmers, dealers, whole seller, retailers and consumer were faced various types of problem associated with mobile phone. 75.00% farmers, dealers, whole seller, retailers and consumer faced transportation problem, 82.50% information problem, 62.50% cost increase, 50.00% network problem, 57.50% illiteracy problem, 80.00% unwillingness to use, 90.00% misinformation of buying and selling, 80.00% difficulty in use, 95.00% uncertainty about demand, 92.50% decrease of face value.

CHAPTER- 5

FINDINGS, RECOMMENDATIONS MAY BE, CONCLUSIONS AND SCOPE FOR FURTHER RESEARCH

5.1 Findings

Farmers, dealers, whole seller, retailers and consumers were the big communities in developing countries where they have not facilities in their area for increase their product and income. Mobile phone is increasing among farmers, dealers, whole seller, retailers but still there is gap available among business, customers and farmers. There is need of enhancement different project about mobile phone technologies where farmers could get easy access to communicate with people to sell their goods in market. The government and other related department should also plan to reach these farmers and provide latest information about seed, weather and market on the time and provide good price of their product.

- About 62.5% had Below S.S.C education; 20.0% of respondents had Graduate. The respondents that had H.S.C education were 10.0%, 7.5% had Post Graduate education. This indicates that majority of the respondents were Below S.S.C which will not make communication and interaction easy during dissemination of agricultural information.
- About 55.0% respondent expressed strongly agrees that they can collect agricultural information by using mobile phone. On the other hand, 37.00% respondents expressed agree, 2.5% disagree and 5.0% strongly disagree.
- Majority of the respondents (42.5%) fell in the group of agree they can collect weather information by using mobile phone., about 20.0% were strongly agree, 17.5% were neutral while 15.0% were strongly disagree and only 5.0% were disagree .
- 42.5% respondent expressed agree that mobile phone helps to get fair market price of agricultural products. On the other hand, 37.5% respondents expressed strongly agree, 12.5% disagree and 5.0% strongly disagree and only 2.5% were neutral.
- Majority of the respondents (55.0%) fell in the group of agree they collect labor by using mobile phone, about 25.0% were strongly agree, 12.5% were neutral while 7.5% were disagree.

- 57.5% respondent expressed strongly agree that mobile phone helps to get market price information of agricultural products. On the other hand, 30.0% respondents expressed agree, 5.0% disagree and 5.0% strongly disagree and only 2.5% were neutral.
- Majority of the respondents (55.0%) fell in the group of highly satisfied that they faced losses wrong information by using mobile phone, about 17.5% were satisfied, 12.5% were neutral while 10.0% were highly dissatisfied and only 5.0% were dissatisfied.
- Majority of the respondents 30.0% fell in the group of satisfied that they can reduce transportation cost by using mobile phone, about 17.5% were highly satisfied, 20.0% were neutral while 10.0% were highly dissatisfied and only 22.5% were dissatisfied.
- Majority of the respondents 27.5% fell in the group were highly dissatisfied and 20.0% were dissatisfied that mobile phone did not help to increase communication with global agricultural products market, about 17.5% were satisfied, 17.5% were highly dissatisfied and they believed that mobile phone helped to increase communication with global agricultural products market and only 17.5% were neutral.
- Majority of the respondents 30.0% fell in the group of neutral, 27.5% were highly dissatisfied and were dissatisfied that they did not face problem if mobile phone network is collapsed. On the other hand, about 20.0% were highly satisfied and 5% were dissatisfied that they Faced problem if mobile phone network is collapsed.
- About 27.5% respondents fell in the group were highly dissatisfied and 17.5% were dissatisfied that mobile phone did not help to increase demand of agricultural products, about 15.0% were satisfied, 12.5% were highly dissatisfied and they believed that mobile phone helped to increase demand of agricultural products and 27.5% were neutral.

5.2 Recommendations

The thesis had shown that respondents are still dependent on mobile phone to collect various types of information about agricultural marketing function. But, to collect various types of information about agricultural marketing function, they must have a mobile phone. Despite their ownership of mobile phones with various functions, many are yet to take advantage of such facilities. Though their phones are currently under-utilized there is a very great willingness on their part to utilize their mobile phones as a source of agricultural information delivery. This reveals the great prospects for agricultural extension to make use of mobile phones for information delivery. In addition, the farmers who do not have phones are willing to purchase so that they too can be part of the revolution of agricultural information delivery through mobile phones when the time comes.

Based on the findings of the study, the following are recommended to ensure an improvement in dissemination of information in the study area:

1. Government and non-governmental agricultural institutions should conduct regular training for farmers, dealers, whole seller, retailers and consumers on the proper use of various functions on mobile phones. This will update their knowledge, expose them to current facilities on phones and empower them to make proper use of them.
2. Government should go into partnership with communication outfits to provide cheaper smart phones at subsidized rate as well as develop agricultural information packages to be used on mobile phones.
3. Government should organize adult literacy programmes for the illiterate farmers, dealers, whole seller, retailers and consumers to improve their reading and writing competency which will in turn enable them use various functions on their phones and contribute to the overall development of the agricultural sector.

4. There should be an appropriate policy by the government that will directly encourage the use of mobile phones that have applicable functions by the farmers in the state to enhance information dissemination to the farmers by various extension organizations.

5 There should be partnership with major Telecommunication Company to have a platform on their network where farmers, dealers, whole seller, retailers and consumers can access relevant information on agriculture free or at token i.e information on weather, health, market prices, outbreak of diseases, and advisory database among others.

6. Farmers, dealers, whole seller, retailers and consumers must be alert to collect information about agricultural marketing function.

5.3 Conclusion

Mobile phones have been spreading fast among farmers and they are exchanging their marketing, weather and business information among each other. Farmers directly contact markets brokers and near cities for sell their product. Similarly farmers focus, search useful and up-to-date market information from social and business networks. Actually Mobile phone plays an important role for the enhancement of farmers business towards agriculture. Recently, communication through mobile phones is considered very important in enhancing farmers, dealers, whole seller, retailers and consumers access to better understand agricultural market situation. Farming communities appreciate mobile phone as easy, fast and convenient way to communicate and get prompt answers of respective problems. Nowadays, the mobile phone has generated an opportunity for the farmers especially to get the information about marketing and weather. Through this important technology, they directly keep in touch with market personals and offer their produce with reasonable prices. The use of mobile phone also keep them aware for weather forecast for agriculture input application like fertilizer and pesticides which might be affected by un fore seen disasters as communicated by metrological department. This device has given new direction and approach to farmers to communicate directly and share about recent advances with each other. The studies showed that mobile phones have saved energy and time of farmers and ultimately improved their income. Mobile phones have provided an opportunity to the farmers, dealers, whole seller, retailers and consumers to communicate directly with market brokers and customers for sell their product in good price. The mobile phones have provided new approaches and thinking to the farmers for get the information and sell their product in market with any bargaining to brokers. Before the mobile phones mostly farmers, dealers, whole seller, retailers and consumer were depend on broadcasting media such as radio and television to get knowledge and information about crops. This time mobile phone technology has given quick communication and approach to community with their community. The educated farmers, dealers, whole seller, retailers and consumer use short service message (SMS) to get latest update agricultural information such as marketing information that facilitate the farmer about making logical decisions.

5.4 Scope for further research

There are very few research were done about this topics “ages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh” in Bangladesh even in the world. So, it can be latest and worthy topics for research and thesis paper.

Further research is needed to address the specific nature of the positive impacts the use of mobile phone provides agricultural Marketing function, specifically in regard to kind, quality, actuality and trustworthiness of the exchanged agricultural information. In addition, the analysis of other information technologies such as the internet in general, but also email use and social works, can reveal the effects of modern information technology on farmers in developing and transition countries.

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Appendix –A

Questionnaire

Usages of mobile phone in rural agricultural Marketing function: A study on Dinajpur district, Bangladesh.

Dear respondent,

I, am a student of MBA, Dept. of Marketing, Faculty of Post Graduate Studies, Hajee Mohammad Danesh Science and Technology University (HSTU), Dinajpur. I would like to invite you to participate in a research study which aims at collecting data about usages of mobile phone in rural agricultural marketing function: A study on Dinajpur district, Bangladesh. You are requested to fill it out this questionnaire with as much accuracy as possible. For your kind information, I shall use 5 point like scale.

Range: 1= Highly dissatisfied; 2= Dissatisfied; 3=Neutral; 4=Satisfied; 5= Highly Satisfied.

1. Don you use mobile phone?

Yes No

Demographic profile of the respondents:

2. Name.....

3. Address:.....

4. Sex: Male Female

5. Age: 18-24 25-34 35-45 46-above

6. Profession:

Farmer Wholesalers Dealers Retailers
 Consumers

7. Education:

Below S.S.C H.S.C Graduate Post Graduate

8. Income:

Below-10000 10000-20000 20000-30000 30000-Above

8. Role:

Here, 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

| Sl. No | Content | 1 | 2 | 3 | 4 | 5 |
|--------|--|---|---|---|---|---|
| 1 | Do you know that you can collect information about agricultural marketing by using Mobile phone? | 1 | 2 | 3 | 4 | 5 |
| 2 | Do you take weather information using Mobile phone? | 1 | 2 | 3 | 4 | 5 |
| 3 | Do you mean that mobile phone helps to get fair market price of agricultural products? | 1 | 2 | 3 | 4 | 5 |
| 4 | Do you collect labor for working through calling by using Mobile phone? | 1 | 2 | 3 | 4 | 5 |
| 5 | Do you collect market price information using mobile phone? | 1 | 2 | 3 | 4 | 5 |

9. Satisfaction / Dissatisfaction

Here, 1= Highly dissatisfied, 2= Dissatisfied, 3= Neutral, 4= Satisfied, 5= Highly Satisfied

| Sl. No | Content | 1 | 2 | 3 | 4 | 5 |
|--------|--|---|---|---|---|---|
| 1 | Do you think that you face losses due to wrong information by using mobile phone? | 1 | 2 | 3 | 4 | 5 |
| 2 | Do you mean that mobile phone helps to reduce transportation cost of agricultural products? | 1 | 2 | 3 | 4 | 5 |
| 3 | Do you think that mobile phone helps to increase communication with global agricultural products market? | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|--|---|---|---|---|---|
| 4 | Do you mean that all parties are facing problem associated with agricultural marketing if mobile phone network is collapsed? | 1 | 2 | 3 | 4 | 5 |
| 5 | Do you think that mobile phone increases demand of agricultural products? | 1 | 2 | 3 | 4 | 5 |

10. Problem related

| | |
|----|--------------------------------------|
| 1 | Transportation problem |
| 2 | Information problem |
| 3 | Cost increase |
| 4 | Network problem |
| 5 | Illiteracy problem |
| 6 | Unwillingness to use |
| 7 | Misinformation of buying and selling |
| 8 | Difficulty in use |
| 9 | Uncertainty about Demand |
| 10 | Decrease of face value |

Thank you for your cooperation.

Signature of the respondent

Mobile No.....