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

Mst. Farjana Rahman

Abstract

This paper analyzed the usages of mobile phone in rural agricultural marketing function. Now a day's farmers are more conscious about the usages of mobile phone in agricultural activities. This means mobile phone usages consider as an important and integrate part of agricultural marketing function by the rural farmers and marketers. Both primary and secondary data were used in this study. Primary data was collected by using survey questionnaire and the sample size was 80 and collected from Chirirbandar thana of Dinajpur district of Bangladesh and data were analyzed by statistical tools. This paper finally showed that the usages of the cell phone in rural Bangladesh is increasing day by day in the field of agricultural marketing.

Keyword: Mobile phone, Rural, Agriculture, Marketing and Function

1.1 Introduction:

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

Mst. Farjana Rahman, Student ID 1203003 , Faculty of Business studies, HSTU, Dinajpur, Bangladesh

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.

According to Abdul Razaque Chhachhar and Md Salleh Hassan (2013), Mobile phone usage in third world countries is playing a vital role for the enhancement of farmers business towards agriculture. Recently, communication through mobile phones is considered very important in enhancing farmers' 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 foreseen 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 to communicate directly with market brokers and customers for sell their product in good price. The benefits accruing from the widespread adoption of information technologies in rural communities have been documented. It has been argued that mobile telephony in developing countries has increased people's knowledge of market information, specifically for buying and selling; improved the coordination of transportation especially during emergencies; and enhanced the administration of international activities (Saunders, Warford, & Wellenius, 1994).

Agricultural information is a key component in improving smallholder agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, food security and national economies. Improvement of agricultural productivity will be realised when farmers are linked to market information. However, one major problem in many rural areas is that farmers and small entrepreneurs generally have no way of knowing the prices before they travel to the market due to poor communication facilities. They often have to rely on middlemen who take advantage of this ignorance. Accurate and timely market information, particularly of perishable items, can significantly reduce transaction and travel costs. There have been quite a few studies that explored how mobile phones impact livelihoods of farmers (Rashid and Elder, 2009). Correspondingly, a positive view that mobile phones offer good value for money appears to support the uptake of mobile phone applications. The importance of knowledge and information sharing in research for development (R4D) settings has been firmly established through research.

1.2 Statement of the problem

The internet came late to Bangladesh with the country gaining connectivity in 1996. In the last few years it has grown considerably, although obviously from a very low base. With an estimated internet user-base of just over 15 million coming into 2015, representing just under 10% user penetration by population, the local internet industry has been preparing to move into the next stage of its development. As this report demonstrates, however, the country must work hard to overcome obstacles associated with the country's lowly economic status and still developing ICT infrastructure, not least of which being an overly bureaucratic government. The report also looks briefly at early moves into broadband internet in Bangladesh and, importantly, the country's first moves into WiMAX and mobile broadband services. On the back of these technologies broadband growth has been getting stronger. The strong growth of the mobile internet customer base is expected to continue into 2016 and 2017. (www.baidu.com) But government of Bangladesh 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. The others critical that affecting the performance of marketing system, transportation problem, network problem, unwillingness to use, uncertainty about demand, unavailable information etc. 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 are the factors affecting use of mobile phone for agricultural marketing in Bangladesh?
Q-2: What kinds of information are available for farmers, dealers, retailers about Agriculture marketing that they can collect by using mobile phone?
Q-3: What is the contribution of mobile phone in Agriculture marketing?
Q-4: What are the problem faced by Mobile phone usage in agricultural marketing function?

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:

- To know the factor influencing the use of mobile phone communicating agricultural information
- To know about the roles of Mobile phone in rural agricultural marketing function.
- To identify the satisfaction and dissatisfaction level of Mobile phone usages in agricultural marketing function.
- To investigate the problem faced by Mobile phone usage in agricultural marketing function.

1.6 Research Methodology

1.6.1 Nature of the study

The research is the form of descriptive design. Both primary and secondary data were used in this study.

1.6.2 Sample Size and Sampling Method

Population of the study were farmers 20 (Twenty), wholesalers 10 (Ten), dealers 10 (Ten), retailers 10 (Ten), consumers 30 (Thirty) from two village **Sonkoir and Borogram** purposively selected for the study.

1.6.3 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.

1.6.4 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.

1.6.5 Data analysis Techniques

Microsoft office package like Microsoft word, Microsoft Excel, Graphical technique (such as pie chart, bar chart, percentage, etc.) and STATA-11 have been used for summarizing and illustrating the collected data systematically.

2.1 Review of Literature

The dissemination of information and communication tech- nologies (ICTs) in developing countries provides much oppor- tunity to transfer knowledge and information by private companies and government department. Last many years mobile phone coverage has been spread fast in Asian, African and Latin American countries. It was indicated that more than sixty per cent of the population of sub-Saharan Africa, Asia and Latin America had access to mobile phone coverage in 2009. In the past the adoption of the mobile phones was primarily by rich people residing in urban areas. Nowadays mobile phones have been adopted by rural and urban populations in developing countries and getting a good benefit and latest information regarding weather, market and other related issues (Aker and Mbiti, 2010). Mobile phones significantly have reduced communication and information costs for the rural people. This technology has pro- vided new opportunities for rural farmers to obtain knowledge and information about agricultural issues, problems and its us- age for the development of agriculture. Similarly, use of ICTs in agricultural extension services especially mobile phone services in the agricultural sector has provided information on market, weather, transport and agricultural techniques to contact with concern agencies and department (Aker, 2011).

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. How- ever, short message service SMS and voice record have given improvements in social relations. Mobile phone based social-networking in the developing countries goes to show the grow- ing importance of this aspect Mobile phones are considered as important for agriculture development. This technology has provided connectivity and offer benefits such as mobility and security to owners (Bayes et al., 1999, Goodman, 2005, Kwaku & Kweku 2006, Donner, 2006). Mobile phones still very expensive in different developing coun-tries where the poor farmers/entrepreneurs could not afford to purchase this technology (Frempong et al., 2007). The cost of the phone itself, maintenance factors such as cost of recharging the phones are also important considerations in regions such as rural Kenya. There were some critical issues were indicated that important similarities exist between the patterns of mobile phone use by the poor and the farmers and small entrepre- neurs. Furthermore, mobile phone uses by this group to access market information were very low (Ashraf et al., 2005, de Silva, 2008; Ashraf et al., 2005). The rural community especially farmers were facing many problems, obstacles and challenge in the use of ICT tools such as mobile phones. There were many challenges were indicated such as organizational, technical, financial, social and illiteracy. In the terms of organizational factor the lack of interest by high- er authorities and extension experts to use ICT tools were also observed. However, the low quality of services provided by the companies and lack of interest by private sector to participate in developing ICT programs for rural area was big issue for the development of agriculture development in rural areas of devel- oping countries (Hosseini et al., 2009). The millions of the people in the developing world depend heavily on agriculture and small businesses. The recent increase in food prices has also created many problems one major problem in many rural areas that farmers and small entrepreneurs gen- erally have no way of knowing prices before they travel to the market due to poor communication facilities.

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.

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 a new 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 (Light- foot et al., 2008). The importance of access, accurate and timely information could provide a good benefit and enhance the capacity of the farmers (Asaba et al., 2006). 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 (HRCA, 2001). 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 larger in remote areas. When the mobile phone network was not avail- able in Ghana traders were spent many day to fill the trucks of banana and beard 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 same time provide fresh banana in market and get good price (Smale & Tushemereiruwe, 2007).

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 (Aloyce, 2005). Mobile phone technology has closed the distance and farmers get most important information within a time without any problems (Campbell, 2005). In Pakistan many studies showed that widely available information on usual market prices for seed cotton strengthened farmers' position when bargaining with traders (Lohano, Smith, & Stockbridge, 1998).

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.

Data Analysis

3.1 Factors influence farmers for communication Agricultural information by using mobile phone:

This parts of interpretation describe regarding the factors that influence farmers for communication Agricultural information by using mobile phone

Table-1
Saving time in dealing with related parties

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	5	6.25	6.25	6.25
	Dissatisfied	8	10	10	16.25
	Neutral	12	15	15	31.25
	Satisfied	25	31.25	31.25	62.5
	Highly Satisfied	30	37.5	37.5	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-1 show that majority of the respondents 37.5% fell in the group of highly satisfied, 31.25% were satisfied On the other hand, about 6.25 % were highly dissatisfied, 10% were dissatisfied and 15% were neutral. from the above table it is clear that mobile phone save the time of different parties in dealing different functions.

Table-2
Promotes interpersonal relationships

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	4	5	5	5
	Dissatisfied	7	8.75	8.75	13.75
	Neutral	9	11.25	11.25	25
	Satisfied	30	37.5	37.5	62.5
	Highly Satisfied	30	37.5	37.5	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From Table-2, high percentages of the respondents (37.5%) were satisfied and very satisfied regarding interpersonal relationships through mobile phone, about 8.75% were dissatisfied and only 5% were very dissatisfied and rest 11.25 % were neutral.

Table-3
Assists in obtaining agricultural information quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	5	6.25	6.25	6.25
	Dissatisfied	10	12.5	12.5	18.75
	Neutral	20	25	25	43.75
	Satisfied	15	18.75	18.75	62.5
	Highly Satisfied	30	37.5	37.5	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-3 show that majority of the respondents 37.5% fell in the group of highly satisfied, 18.75% were satisfied and 25% were neutral. On the other hand, about 6.25% were highly dissatisfied and 12.55% were dissatisfied. From this table we can say that mobile phone is very important for collecting agricultural related product and marketing information.

Table-4
Helps to exchange information anytime the need arose

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	13	16.25	16.25	16.25
	Dissatisfied	15	18.75	18.75	35
	Neutral	30	37.5	37.5	72.5
	Satisfied	10	12.5	12.5	85
	Highly Satisfied	12	15	15	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-4 show that majority of the respondents 37.5% fell in the group of neutral, 12.5% were satisfied and 15% were very satisfied group. On the other hand, about 16.25% were highly dissatisfied and 18.75% were dissatisfied. From this table we can say that Mobile phone did not helped to exchange information immediately when the need arose.

Table-5
Increase income of the people in the community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	20	25	25	25
	Dissatisfied	10	12.5	12.5	37.5
	Neutral	20	25	25	62.5
	Satisfied	15	18.75	18.75	81.25
	Highly Satisfied	15	18.75	18.75	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-5 show that majority of the respondents 25% fell in the group of highly neutral, 18.75% were satisfied and 18.75% were very satisfied. On the other hand, about 25% were highly dissatisfied and 12.5% were dissatisfied. From this table we can say that most of the

person did not know how to increase income of the people in the community through mobile phone.

Table-6
Allow more contracts amongst farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	6	7.5	7.5	7.5
	Dissatisfied	5	6.25	6.25	13.75
	Neutral	17	21.25	21.25	35
	Satisfied	20	25	25	60
	Highly Satisfied	32	40	40	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-6 show that majority of the respondents 40% fell in the group of highly satisfied, 25% were satisfied and 21.5% were neutral. On the other hand, about 6.25% were highly dissatisfied and 7.5% were dissatisfied. From this table we can say that mobile phone is very important for communication among farmers.

Table-7
Enhance strong social cohesion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	8	10	10	10
	Dissatisfied	13	16.25	16.25	26.25
	Neutral	17	21.25	21.25	47.5
	Satisfied	25	31.25	31.25	78.75
	Highly Satisfied	17	21.25	21.25	100
	Total	80	100	100	

Source: Field Survey, 2016

Interpretation: Table-7 show that majority of the respondents 31.25% fell in the group of satisfied, 21.25% were highly satisfied and 21.25% were neutral. On the other hand, about 8% were highly dissatisfied and 13% were dissatisfied. From this table we can say that mobile phone is very important for maintaining social relation.

Table-8
Easy contact with customer/suppliers/others stakeholder

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	3	3.75	3.75	3.75
	Dissatisfied	7	8.75	8.75	12.5
	Neutral	13	16.25	16.25	28.75
	Satisfied	17	21.25	21.25	50
	Highly Satisfied	40	50	50	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-8 show that majority of the respondents 50% fell in the group of highly satisfied, 21.25% were satisfied and 16.25% were neutral. On the other hand, only 3.75% were

highly dissatisfied and about 8.75% were dissatisfied. From this table we can say that mobile phone helped to contact with customers, suppliers and other.

Table-9
Obtaining market information quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	10	12.5	12.5	12.5
	Dissatisfied	12	15	15	27.5
	Neutral	17	21.25	21.25	48.75
	Satisfied	20	25	25	73.75
	Highly Satisfied	21	26.25	26.25	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-9 show that majority of the respondents 26.25% fell in the group of highly satisfied, 25% were satisfied and 21.25% were neutral. On the other hand, about 12.25% were highly dissatisfied and 15% were dissatisfied. From this table we can say that mobile phone is very important for collecting agricultural related product and market related information very quickly.

4.3 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?

Table 10
Agricultural Marketing Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	6.25	6.25	6.25
	Disagree	2	2.5	2.5	8.75
	Agree	15	18.75	18.75	27.5
	Strongly Agree	58	72.5	72.5	100
	Total	80	100	100	

Agricultural Marketing Information

Source: Field Survey, 2016.

Interpretation: Table-10 show that 72.5% respondent expressed strongly agree that they can collect agricultural information by using mobile phone. On the other hand, 18.75% respondents expressed agree, 2.5% disagree and 6.25% strongly disagree. This indicates that majority of the respondents believed that they can collect agricultural information by using mobile phone.

Table-11
Weather Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.5	2.5	2.5
	Disagree	5	6.25	6.25	8.75
	Neutral	13	16.25	16.25	25
	Agree	20	25	25	50
	Strongly Agree	40	50	50	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From table-11, majority of the respondents (50%) fell in the group of strongly agree they can collect weather information by using mobile phone., about 25.0% were agree, 16.25% were neutral while 2.5% were strongly disagree and only 6.26% were disagree .

Table-12
Fair market price

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.5	2.5	2.5
	Disagree	10	12.5	12.5	15
	Neutral	12	15	15	30
	Agree	20	25	25	55
	Strongly Agree	36	45	45	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-12 show that 45% respondent expressed strongly agree that mobile phone helps to get fair market price of agricultural products. On the other hand, 25% respondents expressed agree, 12.5% disagree and only 2.5% strongly disagree and 15% were neutral.

4.4 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-13
Collect Labor by using Mobile phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	12	15	15	15
	Neutral	17	21.25	21.25	36.25
	Agree	27	33.75	33.75	70
	Strongly Agree	24	30	30	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From table-13, majority of the respondents (33.75%) fell in the group of agree they collect labor by using mobile phone, about 30.0% were strongly agree, 21.255% were neutral while 15% were disagree.

Market Price Information.

Table-14
Market Price Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	7.5	7.5	7.5
	Disagree	11	13.75	13.75	21.25
	Neutral	13	16.25	16.25	37.5
	Agree	26	32.5	32.5	70
	Strongly Agree	24	30	30	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-14 show that 32.5% 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, 13.75% disagree and 7.5% strongly disagree and only 16.25% were neutral

Faced losses due to wrong information

Table-15
Faced losses due to wrong Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	2	2.5	2.5	2.5
	Dissatisfied	7	8.75	8.75	11.25
	Neutral	10	12.5	12.5	23.75
	Satisfied	31	38.75	38.75	62.5
	Highly Satisfied	30	37.5	37.5	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From table-15, majority of the respondents (38.75%) fell in the group of satisfied that they faced losses wrong information by using mobile phone, about 375% were highly satisfied, 12.5% were neutral while 8.75% were dissatisfied and only 2.5% were highly dissatisfied.

Reduce Transportation Cost by using mobile phone

Table-16
Reduce Transportation Cost by using mobile phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	2	2.5	2.5	2.5
	Dissatisfied	7	8.75	8.75	11.25
	Neutral	21	26.25	26.25	37.5
	Satisfied	35	43.75	43.75	81.25
	Highly Satisfied	15	18.75	18.75	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table16 show that majority of the respondents 43.75% fell in the group of satisfied that they can reduce transportation cost by using mobile phone, about 18.75% were highly satisfied, 26.25 % were neutral while 2.5% were highly dissatisfied and only 8.75% were dissatisfied.

Mobile phone helps to increase communication with global agricultural products market

Table-17
Mobile phone helps to increase communication with global agricultural products market

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	13	16.25	16.25	16.25
	Dissatisfied	25	31.25	31.25	47.5
	Neutral	18	22.5	22.5	70
	Satisfied	15	18.75	18.75	88.75
	Highly Satisfied	9	11.25	11.25	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From table-17, majority of the respondents 31.25% fell in the group were dissatisfied and 16.25% were highly dissatisfied that mobile phone did not help to increase

communication with global agricultural products market, about 18.75% were satisfied, 11.25% were highly dissatisfied and they believed that mobile phone helped to increase communication with global agricultural products market and only 22.5% were neutral.

Faced problem if mobile phone network is collapsed

Table-18
Faced problem if mobile phone network is collapsed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	35	43.75	43.75	43.75
	Dissatisfied	25	31.25	31.25	75
	Neutral	11	13.75	13.75	88.75
	Satisfied	8	10	10	98.75
	Highly Satisfied	1	1.25	1.25	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: Table-18 show that majority of the respondents 43.75 % fell in the group of highly dissatisfied, 31.25% were highly dissatisfied and neutral were 13.75 % that they did not face problem if mobile phone network is collapsed. On the other hand, about 1.25% were highly satisfied and 10% were satisfied that they Faced problem if mobile phone network is collapsed.

Mobile phone increases demand of agricultural products

Table-19
Mobile phone increases demand of agricultural products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Dissatisfied	12	15	15	15
	Dissatisfied	11	13.75	13.75	28.75
	Neutral	13	16.25	16.25	45
	Satisfied	23	28.75	28.75	73.75
	Highly Satisfied	21	26.25	26.25	100
	Total	80	100	100	

Source: Field Survey, 2016.

Interpretation: From table-19, majority of the respondents 28.75% fell in the group were satisfied and 26.25% were highly satisfied that mobile phone helped to increase demand of agricultural products, about 13.75% were dissatisfied, 15% were highly dissatisfied and 16.25% were neutral.

4.5 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-20
Problem faced by Farmer, dealer, whole seller, retailer and consumer

Sl. No	Name of the problem	Frequency	Percentage
1	Transportation problem	73	91.25 %
2	Information problem	75	93.75 %
3	Cost increase	45	56.25 %
4	Network problem	63	78.75 %
5	Illiteracy problem	79	98.75 %
6	Unwillingness to use	67	83.75 %
7	Misinformation of buying and selling	71	88.75 %

8	Difficulty in use	74	92.5 %
9	Uncertainty about Demand	60	75 %
10	Decrease of face value	75	93.75 %

Source: Field Survey, 2016.

Interpretation: From table-20, Most of the farmers, dealers, whole seller, retailers and consumer were faced various types of problem associated with mobile phone. 91.25% farmers, dealers, whole seller, retailers and consumer faced transportation problem, 93.75% information problem, 56.25% cost increase, 78.75% network problem, 98.75% illiteracy problem, 83.75% unwillingness to use, 88.75% misinformation of buying and selling, 92.5% difficulty in use, 75.00% uncertainty about demand, 93.75%decrease of face value.

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.

- The farmers in developing countries do not have the facilities to increase their produce and income.
- Limited support provided by the ministries of agriculture and agriculture support institutions.
- Lack of education impacts the use of new agriculture technology. The education facilities in the rural areas are very limited and cannot be accessed by all.
- Uncontrolled population growth, increases poverty and decreases quality manpower and burdens the economy.
- Preference to customs and culture is inherent in the rural areas and is very hard to change.
- Deteriorating law and order situation cause hindrance for the farmers to use the new technology.
- Government policies are not very favorable for the promotion of the new mobile phone Information and Communication Technologies.
- Cost of technology i.e. using smart phones is very high and unaffordable by the common farmer.
- Access to villages in remote areas is quite difficult and requires a great deal of cost.
- Infrastructure such as electricity is not readily available to the farmer. Many developing countries had energy issues for the past decade which are yet to be resolved. Electricity problems in rural areas are a drawback for service provider cells and users charging of mobile phone.

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.

7. There is a need to design such products in the mobile phone application area which will facilitate the farmer in achieving better produce and income. The following are the recommendation for enhancing the mobile phone applications:

a) **Designing of Mobile Phone software** : Speech technology should be added to facilitate illiterate farmers and it should be in their local language. Non-textual, check box and menu driven interfaces should be provided to make the application more user friendly and acceptable to the farmers. Information, news, weather updates, market prices, etc. should be transferred to the farmer in speech and local language in a timely manner.

b) **Education programs should be imparted to the farmers:** To promote the mobile phone in agriculture business it is important to design such education courses which meet new mobile phone technology for young farmers. Special programs should be developed by the government and NGOs for female farmers in order to bring them in the main stream workforce and enhance them with these technologies.

c) **Support by the government :** The ministries of agriculture should provide funds and create policies to facilitate on the support for mobile phone technologies in the agriculture industry. Government, concerned departments and the other organization like NGOs which are working in rural areas should plan to reach farmers and provide latest information about agriculture enhancements such as seed, weather and market on time.

d) Cost of technology to farmers: Smart phones should be provided to the rural areas with concessions so that it is affordable to the common farmers. Banks should provide interest free loans to purchase the smart phones on rebated prices. The loan repayments should be on easy installments. The mobile application developers should ensure that the applications are affordable to the common farmers.

e) Infrastructure enhancement's in rural areas : Electricity power generators for the rural areas should be planned and executed on emergency basis. In order for mobile to thrive we need to have consistent and reliable power. Mobile technology and internet should be made available to all remote areas.

f) Security issues: Government and security organization should take the serious steps against criminals. The police and political parties' member who are involved giving the protection to such people should be punished. Government should avail the security architectures available like cameras and tracking system to bring the culprits to justice.

5.3 Conclusion

The information communication technologies are increasing in developing countries for the development of different people such as educationist, doctors, and agriculturist. 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. 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. 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.

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