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Socio- Economic Impact of Mobile Phone on Agriculture at Purkuta Village, Rampurhat II

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ABSTRACT: Agriculture is the base of village economy in India. Deficits in physical infrastructure, problems with availability of agricultural inputs and poor access to agriculture-related information are the major constraints on the growth of agricultural productivity in Purkuta village of Rampurhat II. The more rapid growth of mobile telephony as compared to fixed line telephony and the modern introduction of mobile-enabled information services provide a means to overcome existing information asymmetry. It also helps, at least partially, to overpass the gap between the availability and delivery of agricultural inputs and agriculture infrastructure. This paper investigates what kind of information do farmers value the most to improve agricultural productivity? Do mobile phones and mobile-enabled agricultural services have an impact on agriculture? The answers to these questions have important implications for mobile operators, for information service providers, and for policymakers.

KEYWORDS: Mobile phones, Agricultural Farmers, Agricultural productivity

I. INTRODUCTION

Parkuta is a small village located in Rampurhat - II Block with total 258 families residing. The Parkuta village has a population of 839 of which 442 are males while 397 are females as per Population Census 2011. In Parkuta village, the population of children with age 0-6 is 114 which makes up 13.59 % of the total population of the village. The average sex ratio of Parkuta village is 898 which is lower than the West Bengal state average of 950. The child sex ratio for Parkuta as per census is 839, lower than the West Bengal average of 956. Parkuta village has a lower literacy rate compared to West Bengal. In 2011, the literacy rate of Parkuta village was 64.28 % compared to 76.26 % of West Bengal. In Parkuta, male literacy stands at 72.89 % while female literacy rate is 54.78%. As per the constitution of India and Panchayati Raj Act, Parkuta village is administered by Sarpanch (Head of Village) who is elected representative of the village. This paper shows how mobile phone affects the changing nature of land use pattern, cropping pattern, productivity of crops in this study area. Serious challenges must be addressed in order to achieve faster productivity growth. These include infrastructure constraints, supply chain inefficiencies and significant problems in the diffusion of and access to information. The challenge for the government and policy makers is to regain agricultural dynamism. To achieve a higher agricultural growth rate, farmers should increase their knowledge by calling kisan call centers. Mobile phone helps them to gather their knowledge about the modern and improved technological inputs for agriculture.

II. LITERATURE SURVEY

Mittal and Mukherjee, 2008 identified that in traditional Indian markets, commission agents and traders dominate the supply chain and are the major price setters. Most farmers are dependent on them for information. For the crop sector, information search costs form a significant part (to the tune of 11 per cent) of the total cost incurred by farmers during the agricultural cycle, starting from the decision to sow to marketing. Mobile phone usage by farmers can reduce the information search costs, thereby dramatically lowering transaction costs and enabling greater farmer participation in commercial agriculture (de Silva and Ratnadiwakara, 2008).

Surabhi Mittal, Sanjay Gandhi and Gaurav Tripathi (February, 2010), observed the impact of mobile phone on Indian agriculture. They tried to establish the increasing penetration of mobile networks and handsets in India and their contribution to presents an opportunity in agricultural development of India.

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The World Development Report 2008 (World bank, 2007) emphasized that agricultural extension plays an important role in agricultural development and in promoting sustainable, inclusive and pro-poor economic development. Extension services help to disseminate information regarding the technology relevant for their geographical areas and cropping system.

Surabhi Mittal and Mamta Mehar observed Rapid growth of mobile telephony and the introduction of mobile-enabled information services provide ways to improve information dissemination to the knowledge intensive agriculture sector and also helps to overcome information asymmetry existing among the group of farmers.

III. OBJECTIVE OF THE STUDY

Present study possess following objectives-

- (i) to examine the impact of mobile phone on overall agricultural development of Purkuta village.
- (ii) to evaluate the reduction in information searching costs and travel cost by saving on time due to use of mobile phone.

IV. LOCATION OF THE STUDY AREA

Birbhum lies between 23° 32'30'' and 24 ° 35'00'' north latitude and 88° 01'44'' and 87 ° 05'25'' east longitude. Rampurhat II is an administrative division in Rampurhat subdivision of Birbhum district in the Indian state of West Bengal. Margram police station serves this block. Rampurhat II block consists of the following gram panchayats: Bishnupur, Hansan I, Margram I, Budhigram, Hansan II, Margram II, Dunigram, Kaluha, and Sahapur Headquarters of this block is at Rampurhat. Parkuta is small village located in Rampurhat - II Block of Birbhum district, West Bengal The Purkuta village is located between 24°09'00''N to 23°10'00''N latitudes to and 87°51'20''E to 87°52'20''E longitudes. This Purkuta village of Rampurhat II block represents the entire study area.

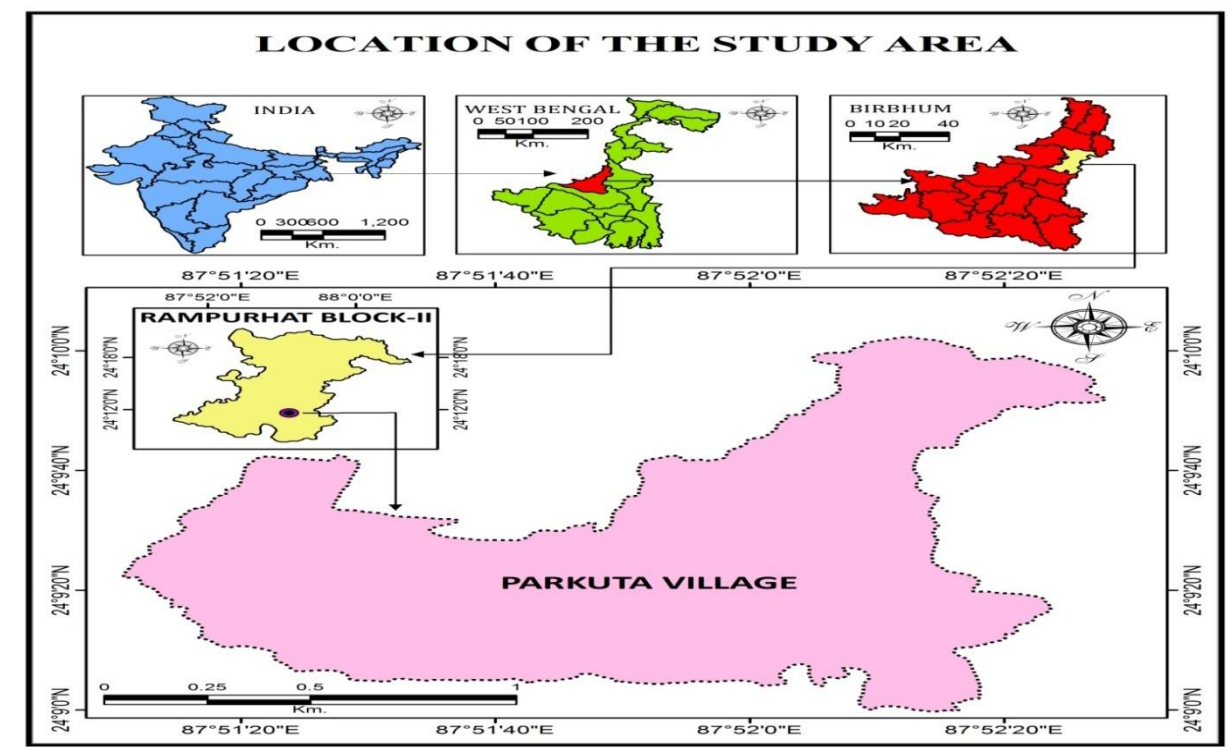


Figure : 1 (Source- Compiled by the author)

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V. DATA BASE

The data have been collected from two sources i.e. secondary and primary. The secondary data on the socio-economic aspects of the study area have been collected from District Census Village Directory, Birbhum, 2001. The data about agriculture have been collected from the records of the respective offices i.e. Deputy Director Of Agriculture (Administration), Birbhum. Primary data obtained from field survey are related to the number of mobile phone holders among all farmers, questions asked by those farmers to the kisan call centers, technological innovations, institutions, infrastructure and policy initiatives etc. have been collected from field investigation.

VI. METHODOLOGY

The step of methodology is concerned with the collection of data and information about the Purkuta village, has been collected. Agricultural farms (in acre) have been selected from this village of Rampurhat block and land owners of 50 farms have been interviewed. The farmers interviewed covered village with only standard mobilephone services and those with access to mobile-enabled agricultural information service. Then data regarding agricultural development, socio-economic condition have been collected. Later these data have been processed.

VII. SOCIO- ECONOMIC STRUCTURE OF THE STUDY AREA

Most of the farmers of this village are low-medium to marginal farmers. Total population of this village is 500. In Parkuta village, most of the villagers are from Schedule Caste (SC). Schedule Caste (SC) constitutes 78.19 % while Schedule Tribe (ST) were 0.48 % of total population in Parkuta village. Most of them are scheduled caste hindu people. Following table-1 and diagram-1 represent it. All interviewees were over the age of 18, male and had varying degrees of formal education. Total literate population is 263 and most of them are male. The average educational status of Purkuta village is for the farmers of the farm is class X. Table-2 and diagram-2 will represent it.

Table-1 Distribution of population and caste division

Items	Number of population
Total population	500
Male population	257
Female population	243
Total Scheduled caste population	499
Scheduled caste male population	256
Scheduled caste female population	243
Total Scheduled tribe population	0
Total general caste population	1

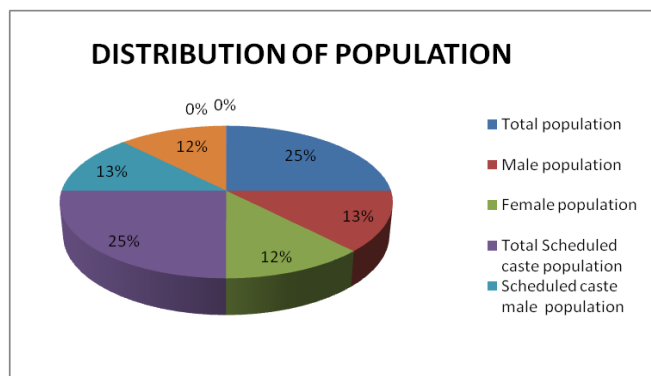


Diagram 1

Source- District Census Village Directory, 2001

Source- Compiled by the author

The table and diagram show that in this village, total population is 500 within which male and female are 257 and 243 respectively. Total scheduled caste population is 499. It includes 256 male and 243 female population. There is only 1 general caste population and no Scheduled caste population.

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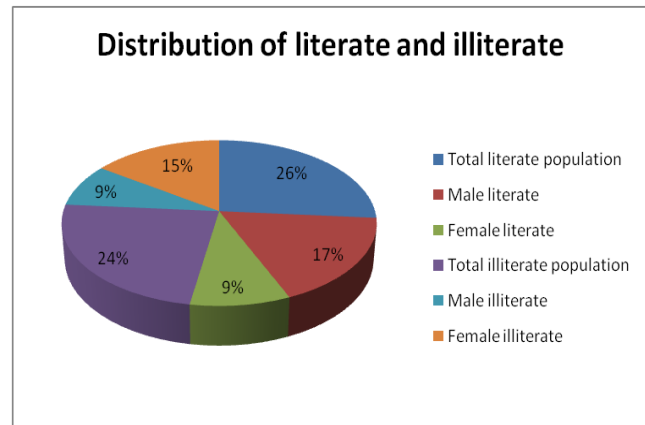
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Table-2 Distribution of educational status of the villagers

Educational characteristics	Distribution of population
Total literate population	263
Male literate	173
Female literate	90
Total illiterate population	237
Male illiterate	84
Female illiterate	153

Source- District Census Village Directory, 2001

Diagram – 2



Source –Compiled by the author

These table and diagram represent total 263 literate population, within which 173 male and 90 female population. Total illiterate population of this village is 237. A few of the small farmers had obtained university degrees, some of them post-graduate and graduate degrees. Women who were approached refused to be interviewed or participate in focus group discussions because they were neither primary decision makers nor primary users of information available through mobiletelephony. In Parkuta village out of total population, 293 were engaged in work activities. 70.31 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 29.69 % were involved in Marginal activity providing livelihood for less than 6 months. Of 293 workers engaged in Main Work, 15 were cultivators (owner or co-owner) while 132 were Agricultural labourer. The farmers interviewed grew a wide variety of crops including crops grown for household consumption. Total worker of this village is 304. Almost all farmers practiced multiple cropping with paddy being the most common crop grown in this village, farmers were often living in joint, multiple-family households with family sizes that ranged from between 12 and 15 people. Family incomes typically varied between Rs. 2000 and Rs. 6000 per month from agriculture. Total worker is 304, total main worker is 163 and total marginal worker is 141. It would be clear from the following table-3 and diagram-3.

Table-3 Distribution of workers

Total workers	Male workers	Female workers	Total main workers	Male main workers	Female main workers	Total marginal workers	Male marginal workers	Female marginal workers
304	166	138	163	128	35	141	38	103

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Source- District Census Village Directory, 2001.

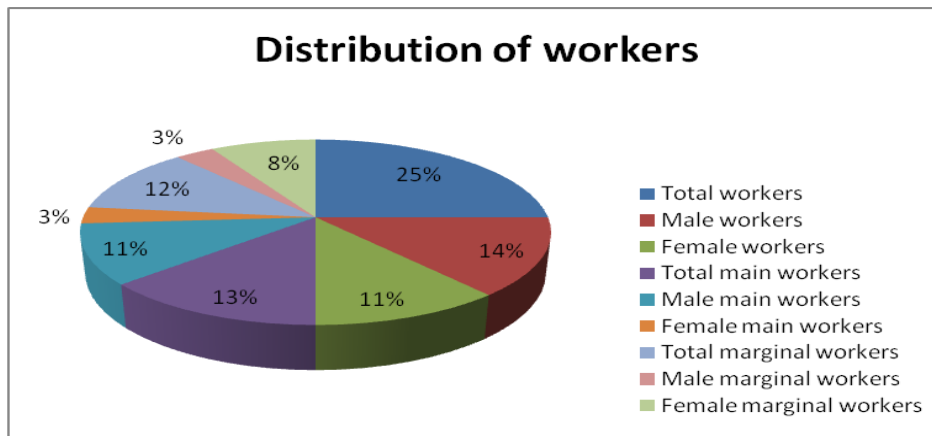


Diagram-3 (Source :-compiled by the author)

It is clear from the pie-diagram that total workers are 304, total male workers are 166 and female are 138. Total main workers are 163 and marginal workers are 141.

VIII. IMPACT OF MASS MEDIA ON AGRICULTURAL DEVELOPMENT

Mass Media is an important component of strategy recognized as such in the midterm appraisal of 10th Plan for revitalization of agricultural extension system. It aims to contribute to the lives of the local community by creation of content by the people and for the people of that community. It will focus on various issues relating to agriculture, rural and community development. It is a powerful communication medium. People have to depend on these to meet their needs of information, education. The majority of them are farmers subsisting on small plots of land, less than 2 acres in size. Deficits in physical infrastructure, in the availability of agricultural inputs such as seed, fertilizer and services in rural areas and inaccess to information are the major reasons for low productivity growth. These factors create the communications and logistics environment for farming. Access to information is one of the many enablers of productivity growth. It will be possible through mass media. Table 4 and diagram-4 represent it.

Table 4: Sources of agricultural information used by farmers

Name of sources	Number of benefitted households
Demonstration program	6
Television	7
Radio	9
News paper	6
Mobile phone	16
Computer	1
Others	5

Source: Table compiled from data obtained from field survey (December, 2014)

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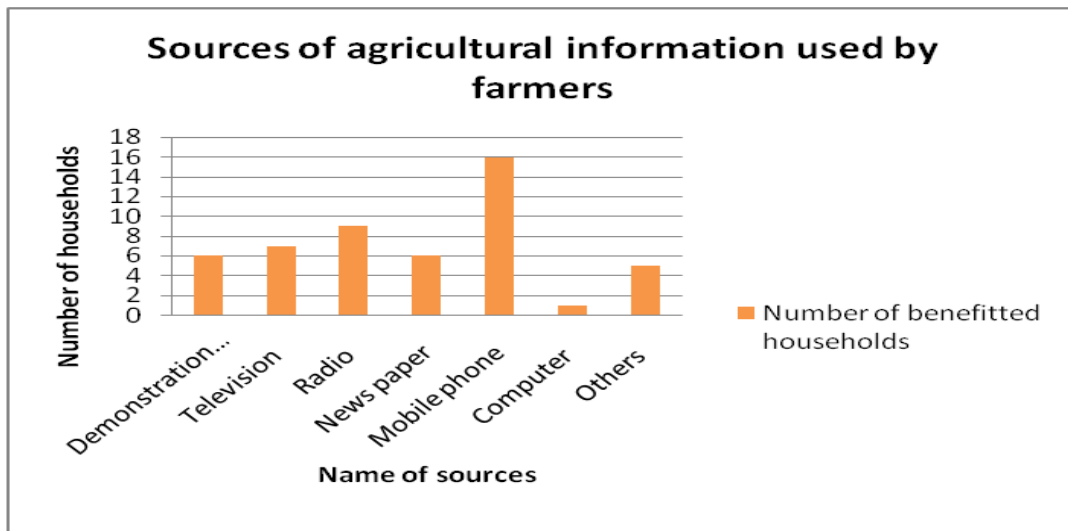


Diagram – 4 Source- Compiled by the author

From the table it is clear that within 50 households of the farmers of this village most of the farmers collect agricultural information through mobile phone. Sometime traders, input dealers, seed companies and relatives inform them about HYV seed, application of chemical fertilizer, application of modern technology, ideal cropping pattern of the area etc. However, the perceived quality and relevance of the information provided by these sources are highly variable. Most of the farmers who were interviewed lacked access to consistent, reliable information for many of their needs and often relied on a combination of traditional knowledge, experience and guesswork to make decisions. The vital constraint that farmers face is that when market price information is available to them, they are often unable to exploit the price disparities that exist between major and minor markets due to their inability to transport their produce to markets with higher prices.

IX. MOBILE –ENABLED INFORMATION SERVICE

This study reveals how mobiles act as an instrument of information dissemination. Thus, an assessment of new mobile-based information services targeting farmers was considered. It has been done to evaluate whether these services provide a more effective way to meet farmers' information needs – timely, more accessible, more consistent, and better customised. In this area one mobile services targeting farmers is Kisan Sanchar Limited. Its office in westbengal is at Kolkata. The objective of IKSL are as follows . Table-5 would represent it.

Table 5: Mobile information services for farmers

Name of mobile information service	
Cost	Free Voice messages Helpline service at a cost of Rs. 1/min
Nature of Delivery	Voice delivery
Number of Daily Messages	4 in a day
Information Provided	Weather Crop/animal husbandry advisory Market Prices

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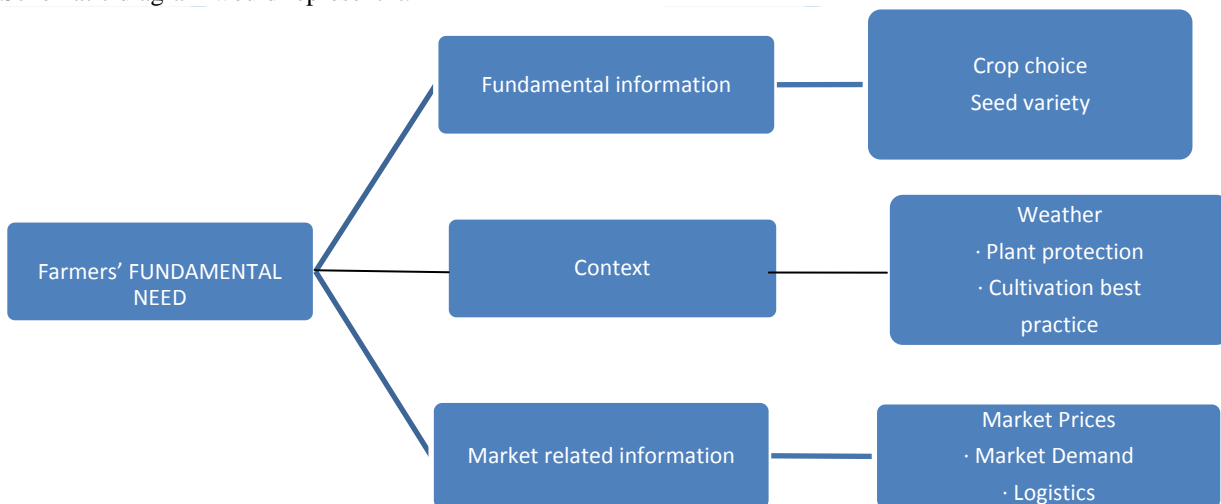
	Fertiliser availability Electricity timings
Other Services	Customised advisory through helpline
Comments	If message not immediately received by farmer, it can be retrieved by dialling a number at a cost of Rs.1 per min. Messages delivered at unpredictable times of day.

Source : <https://in.linkedin.com/pub/chanchal-mozumder/a3/33b/296>

Different types of questions are asked by the farmers . These are varied through the growing season. However, the broad categories of information required were common to all of them, irrespective of their location and crops. These categories were:

- a) fundamental stage which helps a farmer with fundamental information such as what to plant and which seed varieties to use.
- b) contextual information such as weather, best practice for cultivation in the locality.
- c) market related information such as prices, demand indicators, and logistical information.

mobile telephony is an efficient replacement for traditional information delivery mechanisms to meet farmers' information needs. This study clearly underlines the hidden potential of mobile-based agricultural information services. Schematic diagram would represent it.



Source -: Schematic diagram compiled from data obtained from field survey.

X. NEGATIVE IMPACT AND ALTERNATIVE MEASURE

Though the Kisan Sanchar Limited help to take correct decisions, reduce wastage and enhance earnings, it has some negative impacts. In some cases the farmers in this village have the capacity to store their crop in their homes for 3-4 months. Typically, they would sell their crop immediately after the harvest. However, they recently received

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information from KSL on both daily market prices as well as future price predictions. Based on that information, they have chosen to store their goods and wait for a better price rather than sell immediately. While they have not yet realized the possible positive impact from this decision, it was the first time that these farmers had retained their crop without selling. This showed a significant change in behaviour as a result of the information received. To delay the time of sale beyond a short time window, it is imperative that farmers have the financial means to do so (in addition to storage capacity). In cases where cash requirements are immediate, this financial flexibility may not exist and the farmer will need to sell the crop with haste to repay loans taken from moneylenders or traders.

Non-availability of credit at reasonable rates is a persistent problem for small farmers. Although rural borrowing from institutional agencies has doubled in the last three decades, the share of rural credit from non-institutional agencies is still above 40 %. This reflects exclusion of small and marginal farmers from the formal credit system, the primary reason being their inability to offer collateral. This has led to an excessive dependence on informal credit sources with their exorbitant interest rates. The lack of credit availability has restricted the use of improved seeds, fertilizers and modern technical know-how by farmers and this, in turn, has had an adverse impact on agriculture production and food security. Sometimes due to network problem, mobile connectivity is not reachable in this village. So, the farmers should take wise decision by making combination between their own experience and modern strategy based information through mobile phone for agricultural development.

XI. CONCLUSION

From the above study it can be concluded that modern agriculture should be related to modern technology. In spite of having some problems, mobile phone truly helps to develop agriculture. The most important differentiation between mobile phone and other mass media (T.V, radio and news paper) is that these allow only one way flow of information. But mobile phone helps to do interaction between the farmers and the informers. As an information platform to receive sms, menu or voice message information, mobiles provides the ability to get connected to new knowledge and information sources. In this early stage, mobile phones are being used in Indian agriculture and are starting to deliver agricultural productivity improvements, an impact that is enhanced by the new mobile-enabled information services and Purkuta village is not an exception.

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