

## **IMPACT OF MOBILE PHONE ON LIVELIHOOD OF RURAL PEOPLE**

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### **ABSTRACT**

*The rural area, where nearly 69 per cent of the total Indian population lives still faces several challenges, such as low literacy, poor healthcare facilities, low income, high poverty, low access to formal employment and poor infrastructure. The mobile phones can facilitate to get out of these constraints by providing need-based and user-centric information and services at an affordable cost which is hitherto unreachable. In this context, this paper explores the impact of mobile phone usage on livelihood of rural people in India through a primary survey conducted in one of the underdeveloped States viz. Bihar. In total, 418 mobile phone users were interviewed in 12 villages in six districts of the State. The survey found that mobile phone users were able to gather information on agricultural and non-agricultural purposes and they were in touch with their relatives and migrant family members. They were obtaining timely information on employment, education, health, business, transferring funds and contacting their family members during emergencies. But there are still many limitations in rural areas such as lack of electricity for charging phones, lack of knowledge of value added services, high-cost of mobile hand set, local content mobile applications, call drop or poor signals and fraudulent money deduction by the operators without any call or message. These issues need urgent attention, so that rural people can fully exploit the use of mobile phone for the betterment of their livelihood.*

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## Introduction

India did not participate in the landline phone revolution but has seen unprecedented growth in mobile phones, with over 970 million subscribers by the end of March, 2015, making it second to China. The tele-density (number of phones per 100 people) has grown from about 13 per cent in March 2006 to over 77 per cent currently. Mobile usage, which was restricted to urban areas a few years ago, has started penetrating the rural areas of the country at a good pace. Rural tele-density has grown at an impressive rate, rising from 1.9 per cent in 2005 to over 48 per cent by March, 2015 (TRAI 2015). According to the Census of India, 2011, around 69 per cent of the total population still resides in rural areas. People in rural areas, like in most of the developing countries face several challenges, such as low literacy, poor healthcare facilities, low income, high poverty, low access to formal employment and poor infrastructure (Islam, 2011).

Mobile phones can facilitate need-based and user-centric information and services at an affordable cost to rural people, which is hitherto unreachable. However, questions arise as to what kind of information rural people seek through mobile phones and how they access it?, What is the impact that information has on mobile phone users on their livelihood like employment, income, education, health, social network and others?, What innovative practices are devised by both service providers and mobile phone users to get its maximum benefits? and What are the

barriers or challenges the rural people face to access the mobile phone?

In this context, the present paper attempts to explore the usages of mobile phone and its impact on livelihood of rural people in India.

## Review of Literature

Jensen (2007) by using time series data revealed that the mobile phone adoption by fishermen and wholesalers was associated with a steep reduction in prices, the complete elimination of waste, and the near-perfect adherence to the law of one price. It is argued that mobile phone has the potential to break the rural-urban developmental gap by delivering information on a variety of socio-economic issues (Aker and Mbiti, 2010). Abraham (2006), reported that mobile phone use had helped to remove information asymmetries in the fishing supply chain from the producer/fishermen to the mobile phone users and helped in improvement of their quality of life as they feel isolated earlier.

Souter, et al. (2005) examined the economic impact of Indian mobile phone usage on the rural population and revealed that mobile phones were used in emergencies, and maintaining social networks, especially where family members lived remotely (as migrant workers). Meera, et al. (2006) reported that ICT intervention had a positive impact on farmers in terms of valued access to market information, land records, farm management, question-and-answer services, management

of pests and diseases, and rural development programmes.

However, there is dearth of studies related to underdeveloped areas like Bihar, where 89 per cent people live in rural area (Census of India, 2011). So it will be interesting to know how the use of mobile phone has helped in improvement of their livelihood. In turn this study would help policymakers, mobile phone operators, researchers and technology transfer specialists to frame better developmental strategies in the future.

### Methodology

This paper is mainly based on information collected from primary field survey by using a structured schedule and selected case studies. The survey was conducted among mobile phone users in rural areas of Bihar. The telecom infrastructure in Bihar has seen a fifteen-fold increase during the last ten years from 4.2 million in 2005 to 64.8 million in 2015. Particularly mobile phone subscribers have increased almost 17 times during the same period. However, the tele-density in Bihar is still lowest (48 per cent) in the country with a huge rural (30 per cent)-urban (150 per cent) divide (Bihar Economic Survey, 2014-15).

The sample of the study was taken from a census survey conducted by Rodger et al. (2013) in Bihar covering 12 villages from six districts (2 villages from each district) namely Gaya, Nalanda, Rohtas, Gopalganj, Madhubani and Purnea representing the geographical clusters of the State. The Census survey results of 5934 households showed that percentage

of mobile phone users' households across districts were almost in similar pattern to the Census of India, 2011 (annexure I) with highest mobile phone users in Purnia and least in Nalanda district. To make it representative, 10 per cent sample of mobile phone users from the large villages viz. Madhubani & Purnia and 20 per cent from other four smaller villages with at least minimum 10 users were selected for the survey from each village. The final sample of mobile phone users was done using systematic circular random sampling with replacement method. Accordingly, the sample mobile user households (394) were selected for final survey.

### Results and Discussion

**Mobile Phone Users:** Table 2 shows the profile of sample mobile phone users on the basis of their economic background. On the basis of ration cards, around 28 per cent of respondents belonged to Below the Poverty Line (BPL) families and 16 per cent were from very poor families. Around 40 per cent of respondents belonged to households with migrants and more than 80 per cent to households comprising marginal landholders and the landless. A large number of marginal landholders and landless families migrate out because of poor economic conditions and lack of jobs or income opportunities in their native places. Therefore, the incidence of out-migration is very high in rural Bihar. The members of these migrant families remain in touch with each other through the mobile phone.

**Table 1: Household Economic, Migration and Landholding Status of Sample Mobile Phone Users (in percentage)**

Criterion	Sub-group	%
Economic status	Very poor	15.6
	BPL	28.2
	Above Poverty Line (APL)	56.2
	Total	100.0
Residential Status	Households without any migrant(s)	59.7
	Households with migrant(s)	40.3
	Total	100.0
Landholding	Landless	34.7
	Marginal (below 1 ha.)	47.3
	Small (1-2 ha.)	10.5
	Medium (2-10 ha.)	4.9
	Big (More than 10 ha.)	2.6
	Total	100.0

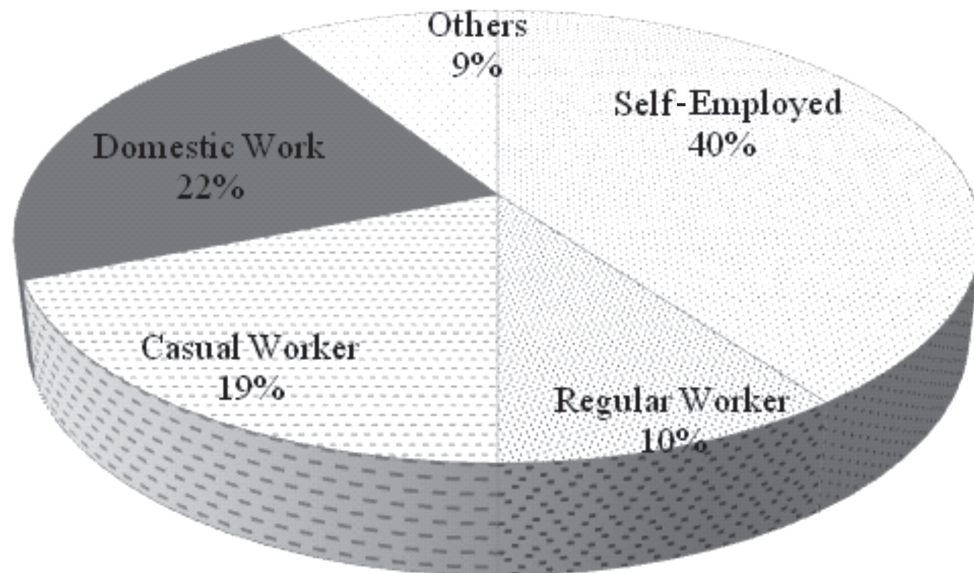
A little more than one-fourth of respondents were female and predominantly middle-aged (between 30 and 59 years of age), married and literate as presented in Table 2.

**Table 2: Gender, Marital Status, Age Group and Educational Status of Mobile Phone Users (in percentage)**

Criterion	Sub-group	%
Gender	Male	71.8
	Female	28.2
Marital status	Unmarried	28.2
	Married	87.0
	Widow/widower	4.7
Age group	15-29	8.4
	30-59	65.3
	59+	16.3
Educational status	Illiterate	6.1
	Below primary	37.1
	Secondary and higher secondary	38.5
	Graduate	18.4
	Total	100.0

About two-fifths of the respondents were self-employed and engaged in the agriculture and allied activities followed by domestic, casual and regular work as presented in Figure 1. This shows the over reliance of rural people on agriculture and allied activities for their livelihood. However, a substantial proportion of them (22 per cent), particularly women were involved in household activities, who took care of domestic chores like preparing food, washing

utensils, taking care of the children and elderly members of the family. Around one-tenth and one-fifth of the respondents were involved in regular and casual work, respectively. The rest were others (9 per cent), that include students, retired/pensioners/too old and disabled. This shows the characteristics of typical rural and backward area, where people largely rely on agriculture and casual work for their livelihood with relatively less involvement in regular or formal jobs.

**Figure 1: Occupational Profile of Mobile Phone Users (in percentage)**

Overall, the individual characteristics of the sample mobile phone users showed that the mobile users in the underdeveloped areas mainly belonged to the age group of 30-59 years, male, employed, working and married, and young to middle-aged people.

**Mobile Phone Ownership and Access:** Most of the respondents owned mobile phone sets and 6 out of 10 had purchased it by

themselves as shown in Table 3. The rest got them from their family members, primarily from their children and parents. This phenomenon was observed to be relatively higher among women, who got their mobile phone sets from their spouses and parents. Out of those who did not have mobile phones used devices belonging to their neighbours, relatives/friends and family members.

**Table 3: Mobile Phone Ownership and Access Pattern of Mobile Phone Users (in per cent)**

Access to mobile	User category	Male	Female	Persons
Purchased by whom	Self	61.8	49.6	58.3
	Parents	4.6	10.8	6.3
	Brother/sister	2.8	0.0	2.0
	Spouse	4.9	14.4	7.6
	Son/daughter	22.8	21.6	22.5
	Relatives	3.2	3.6	3.3
	<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>
If not purchased, accessing mobile phones of	Family members	16.7	0.0	11.8
	Relatives/friends	16.7	30.0	20.6
	Co-workers	8.3	0.0	5.9
	Neighbours	58.3	70.0	61.8
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Total</b>	<b>N (Row %)</b>	<b>283(71.8)</b>	<b>111(28.2)</b>	<b>394(100)</b>

The differences were also found in the average number of outgoing and incoming calls per week. The average outgoing calls were lower when compared with the average number of incoming calls per week as given in Table 4. This is because a substantial number of people in rural areas use their mobile phones only to receive calls from their migrant

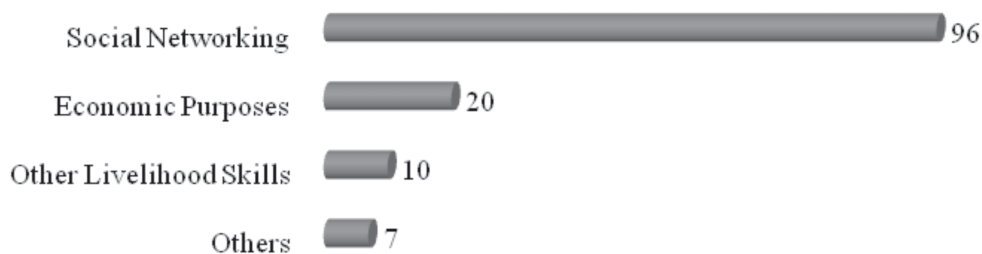
family members. A missed call to their migrant family members was used as a signal for a return call. The average expenditure per month on mobile phones by male was higher as compared to female. As mentioned earlier, rural women keep mobile phones largely to receive calls from their family members.

**Table 4: Average Calls, Expenditure and Density of Mobile Phone**

Call patterns	Male	Female	Persons
Outgoing per week (Number)	29	25	27
Incoming per week (Number)	35	30	34
Monthly expense (₹)	176	152	169

**Mobile Phone Usage:** Almost every single respondent used the mobile phone for keeping in touch with friends and family members (social networking) as shown in Figure 2. One-fifth of respondents were found to be using mobile phones for economic purposes like securing information on agriculture, employment and credit. One-tenth

of respondents mentioned that they used mobile phones for improving their livelihood skills through education and securing information on healthcare. Around 7 per cent of respondents revealed that they used mobile phones for entertainment and contacting others during emergencies.

**Figure 2: Type of Mobile Phone Usage (in percentage)**

Note: Multiple responses.

#### **Mobile Phone and Economic Activities**

The respondents reported about using mobile phone for accessing information on

employment followed by agriculture (include vegetable and dairy) and credit or money transfer (Table 5).

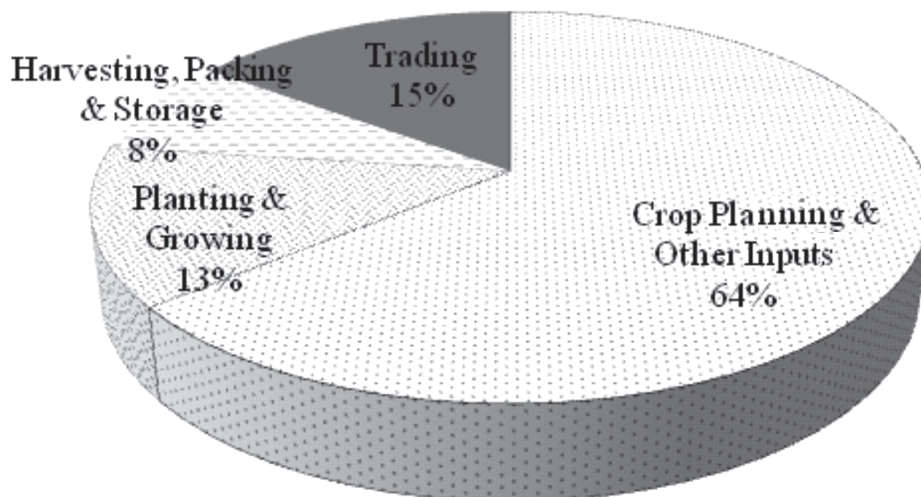


**Table 5: Use of Mobile Phone for Economic Activities**

	Number	%
Agriculture	25	6.5
Employment	108	27.4
Credit	6	1.6
Total	79	20.0
Number	394	100.0

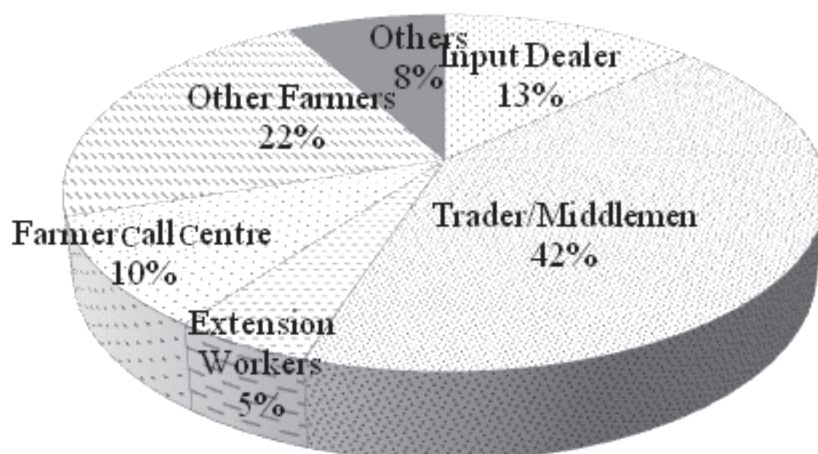
**Mobile Phones and Agriculture & Allied Activities:** Around 7 per cent of the respondents, who were involved in farming activities used to collect information through their mobile phones at various stages of the agricultural cycle and for vegetable and dairy farming purposes (Table 5). They mainly collect information at initial stages pertaining to cultivation (64 per cent) like on seeds and

fertilisers, as depicted in Figure 3. Some of them also said they collected information pertaining to growing (13 per cent), harvesting (8 per cent) and trading at later stages (15 per cent). They mostly sell their produce to middlemen, who buy the produce from the villages. Very few of them directly go to the mandi (wholesale market).

**Figure.3: Usage of Mobile Phones in Agriculture Production (in percentage)**

The major sources of information to collect agriculture related information were traders/middlemen (42 per cent) followed by other farmers (22 per cent) and input dealers (13 per cent) as presented in Figure 4. Some of them also contacted the State farmer call centre (10 per cent) directly to receive important information.

**Figure 4: Sources of Agriculture Information (in percentage)**



Those found to use mobile phones for farming purposes, though small in number, reported saving their time (62.5 per cent), improved farming techniques as well as productivity (12.5 per cent), reduced production costs (12.5 per cent) and struck better bargains with middlemen and traders (6.3 per cent) resulted in higher profits as shown in Table 6.

**Table 6: Most Important Benefits in the Agriculture Production by Use of Mobile Phone (in percentage)**

Benefits	No.	%
Reduction in production cost	4	12.5
Higher productivity	2	6.3
Saving of time	20	62.5
Improved farming practice	4	12.5
Timely decision	2	6.3
Total	32	100.0

Mobile phones have also helped in increasing both productivity and income in vegetable farming. Vegetable-growing farmers sell their vegetables at the local market situated within a radius of 10-15 km from the villages. They enquire about the prices of vegetables from other markets situated in a radius of around 100-200 km through their mobile phones and accordingly decide the appropriate sale price of their vegetables at the local market. This has helped them secure better prices (37.5 per cent), reduce wastage (12.5 per cent), provide timely service (12.5 per cent), and ensure easier access to buyers (12.5 per cent) as given in Table 7. In addition, some respondents (3.2 per cent) told mobile phone has helped in selling their milk outside the village.

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**Table 7: Most Important Benefits in Vegetable Selling by Mobile Phone Use (in percentage)**

Benefits	Number	%
Reduction in wastage	5	12.5
Availability of additional time to provide services	5	12.5
Reduction in procurement cost	10	25
Higher returns	15	37.5
Access to buyers	5	12.5
Total	40	100

**Mobile Phones and Labour Market:** Mobile phones play an important role in accessing labour market information. Around 27 per cent respondents said about using mobile phone for accessing labour market information. They informed about using two main sources to access labour market information: migrant members (who could be family members, relatives and friends) and employers (Table 5). Both these sources provide information through mobile phones. Employers and casual labourers contact each other for construction and agricultural work, both within and outside the place of residence. Mobile phone usage has reportedly reduced the control of middlemen or contractors in casual labour outsourcing processes and led to better working conditions for labourers. Earlier, contractors or middlemen used to exploit workers, which resulted in low wages and poor working conditions. Few such respondents describe as "My friends are working in private companies in Delhi and they call me whenever a vacancy arises in their companies"; another

respondent, "I used to go to Punjab during the harvest season. Earlier, we had to either contact local contractors or visit Punjab and stay unemployed for a few days before getting work. Now, we are able to save time and money, apart from bargaining for higher wages and better working conditions."

**Mobile Phones and Money (Credit) Transfer:** Mobile phone is also used for money transfer to family members in underdeveloped areas. It enables families to learn about their migrant member's details of money transferred and other bank transactions. In the formal banking system details of processes of money transfers through internet banking or cash deposits in the accounts of family members' are shared through mobile phones. Only 2 per cent respondents said that mobile phone helps in money transfer in two ways: one, when family members from rural areas deposit money in the accounts of their children and other family members who are studying or seeking employment, they exchange details about

these transactions over the mobile phone; and another, when migrant family members deposit money into the accounts of their family members living in native villages and communicate details of these transfers over the phone (Table 5). Some also mentioned that they used the bank accounts of other people to receive or deposit money for their relatives back home.

One respondent revealed that "I have an account in the local State Bank of India branch where my husband transfers money through internet banking from his mobile phone in my account from Delhi. Details of the deposit are then conveyed over phone. I withdraw money from the ATM machine in the local market". Another said "My son deposits money in my neighbour's account and gives the details over phone. My neighbour withdraws the money and hands it over to me on the same day. Earlier, I used to get money only once in every six or twelve months from my son, depending on when he visited us."

Apart from the formal banking system, the informal money transfer system is also gaining popularity through the usage of mobile phones. Under this system, people transfer and deposit money by using their mobile phones. One such cash transfer system is through the Jai Janta store in Delhi, which is specifically designed for India's rural populace. The agency, which has franchisees all across north India, is specifically designed to ensure its agents hand deliver their clients' money to their families. Once the money has been delivered to the customer, his/her family

member calls the migrant member to confirm the transaction. The store charges a commission of 2-5 per cent per transaction.

Another example is that of the World Bank-funded Eko Financial Services, which provides mobile banking services by using small shops as de facto banking outlets. When a customer wants to send money to a relative, she/he deposits cash with an Eko shopkeeper, who dials a code to get the transaction cleared. The Eko shopkeeper alerts the bank to transfer the money to their outlet (shop) in the customer's relatives' village, where he or she can pick up the cash. One Eko shop owner said he dealt with more than 120 cash transfer customers per day, who send money to their villages that are scattered across east India. At present, Eko has more than 1,000 outlets in several States across eastern India.

Vodafone India in association with ICICI bank has also started the unique money transfer and payment service "M-Pesa", which has banking network and financial penetration in rural areas. The innovative use of mobile technology makes it possible for customers to enjoy a fast, simple and secure way to transfer money and make payments. Using their M-Pesa account, customers can at their convenience avail facilities of deposit and withdraw cash from designated outlets, transfer money through any mobile phone within the country, make payment to recharge mobile, clear utility bills and shop at select shops, among others. The service is available across Bihar through over 2800 specially trained authorised agents. According to the

respondents, this money transfer system via mobile phones has helped greatly in cutting down travel time, thereby reducing costs, besides making access to information easier.

### **Mobile Phones and Livelihood Services**

In the livelihood services respondents using mobile phone access information on education, health and governance, which also includes government welfare schemes (Table 8).

**Table 8: Distribution of Livelihood Services**

Livelihood Services	Number	%
Education	30	7.5
Health	25	6.5
Governance	21	5.4
Total	39	10
Number	394	100

### **Mobile Phones and Education/Skills**

**Development:** The enhancement of education/skills development is often considered a priority in rural areas, as they help improve livelihood skills. Around 8 per cent of the respondents revealed that they gathered information relating to higher educational opportunities through relatives/ friends and employees of educational institutions and through their websites (Table 8). There have been instances where the use of mobile phones has helped in obtaining information about educational institutes, admission procedures and examination results. However, most respondents claimed they still preferred visiting educational institutes directly to obtain detailed information.

Some respondents reported accessing the internet over their mobile phones. However, the use of education-related websites was common among students and higher educated people. They mentioned that they used SMS facility to learn more about exam results and other related information. Mobile phones had also transformed the education landscape by providing timely information, as well as helped them in cutting down travel expenses. One respondent stated that "I enquired about the admission procedure for engineering colleges in Delhi and nearby it from one of my relatives residing in Delhi. I got a few contact numbers and spoke to the college administration staff directly. This helped my son to secure a seat in an engineering college near Delhi."

**Mobile Phones and Health Services:** The underdeveloped areas in India face a number of challenges relating to obtaining information on health services or developing healthcare infrastructure. Around 7 per cent of the respondents mentioned about sourcing information on health services either from their relatives/friends or by contacting doctors directly, while traditional healers in the village could be called within minutes in case of emergencies (Table 8). Ambulance or private vehicle services were made available at a call and at some places, pregnant women and women nursing their infants were informed about impending health check-ups and vaccinations through text messages. Rural healthcare workers use mobile phones for consulting doctors in urban hospitals for serious cases. A list of the mobile phone numbers of doctors has been made available by the government to all rural healthcare workers for consultation purposes and emergencies.

To illustrate a case, "World Health Partners and Bill & Melinda Gates Foundation along with the Idea Foundation, have established a regional medical centre at Patna in Bihar. A team of doctors at the centre asked their patients or medical personnel to describe the symptoms of their illness over the mobile phone and accordingly dispense remedies. This has helped the rural people to cut down travel and medical expenses and obtain professional advice rather than being solely dependent on touts/healers and paramedics. Sub-centres established at the block level in every district have trained rural health workers, who provide

basic and primary healthcare services to rural patients with the help of doctors based in Patna. These centres have been established primarily for rural patients who do not have access to doctors or medical facilities, and are situated in remote locations. Doctors or counsellors at the regional centres provide medical information and conduct referrals for their patients in the rural areas."

Thus, with mobile phones now easily available in most places, rural people have easier and better access to medical care.

**Mobile Phone and Governance:** There were still few instances of mobile phone use for governance found in rural areas. Around 5 per cent respondents said about approaching government officials through mobile phone such as Kisan Call Centres, where they get information on agriculture inputs, seeds and fertilisers, monsoon, etc. (Table 8). On the other hand, government officials revealed that they had launched several m-governance initiatives in the State. The Government of Bihar has introduced SMS based monitoring system for various welfare schemes to track their status. This SMS monitoring system has helped in promoting transparency and accountability and check officials' laxity. They update the status of schemes on daily or weekly basis and send SMS or texts to district and State headquarter, which act as a feedback for all the government departments and pave the way to take appropriate actions. This system of mobile governance highlighted good and bad performance of the government schemes across 534 blocks in the State.

One of the female respondents revealed that "I get regular information regarding vaccination, child healthcare, and about other government welfare schemes on my mobile phone."

**Mobile Phones and Social Capital:** Mobile phones have proved to be a boon in rural areas, as they have brought about a sense of social security, connectivity and safety among the people. Mobile connectivity has made it possible for people to get emotional and financial support during emergencies. Mobile

phone users have been benefited by broadening their social network as majority (96 per cent) of the respondents reported using it for social networking (Table 5). It has also enabled easy communication with family members (40.6 per cent to spouse, 21.9 per cent to parents) and relatives/friends (95.6 per cent), particularly for women whose spouses are working in far-off places. Women added that mobiles had actually helped in maintaining and strengthening their familial and social bonds as presented in Table 9.

**Table 9: Use of Mobile Phone in Connectivity and Social Security (in percentage)**

Connectivity	Male	Female	Persons
Spouse	34.7	55.4	40.6
Parents	20.5	25.6	21.9
Other family members	38.6	40.5	39.2
Relatives/friends	95.5	95.9	95.6
Total	100	100	100
			378 (96%)

Note: Percentages do not add to hundred because of multiple responses.

Overall, the social impact of mobile phones was observed in the form of enhanced social capital for mobile phone users, which in turn resulted in improved personal well-being and satisfaction, and in saving time.

#### **Mobile Phone and Value Added Services**

Mobile phone and value added services (MVAS) are slowly gaining popularity among

rural people. About one-tenth of total respondents mentioned using SMS during festivals and important occasions like birthdays and New Year celebrations for sending congratulatory messages. A higher percentage of female respondents (9.9 per cent) were found to be listening to music as compared to their male counterparts (8.8 per cent) as shown in Table 10. Only a few of them



(6.8 per cent) mentioned accessing the internet through mobile phones in rural areas. Approximately one-tenth of total male users added that they also used mobile phones to download ring tones, music and games. This facility was availed by people who were relatively wealthier and more educated. It was

found quite common that mobile handsets were used as much for 'entertainment' as they were for communication in rural areas. Some respondents mentioned that people, especially youngsters, had started using mobile phones for only listening to music in rural areas.

**Table 10: Use of MVAS by Mobile Phone Users (in percentage)**

		Male	Female	Persons
Use of	SMS	8.4	4.1	7.2
	Internet	7.5	5	6.8
	Music	8.8	9.9	9.1
Downloading of	Ring tone	13.3	13.2	13.3
	Music	14.3	10.7	13.3
	Games	10.7	10.7	10.7

### Innovative Usage

In the surveyed areas many stakeholders and mobile phone customers have come up with innovative methods of using the technology. These are as follows:

- **Missed call:** The use of the 'missed call' was found very common among migrant family members/friends, serving as an indication for them to return the call. Women and senior citizens in particular benefited from this practice.
- **Courier facility:** This basically meant using the mobile phone for money transfers and credit facilities in rural areas, which has been discussed in detail

earlier in mobile and money transfer section.

- **Multiple SIM:** Members of poor families used a single mobile phone set with multiple SIM cards. A member could then insert his/her SIM card in the phone to make a call. Understanding this pattern of saving on fixed costs, mobile phone manufacturers came out with instruments that could hold multiple SIM cards.
- **Solar Light for Mobile Charging:** In one of the surveyed villages in Bihar, a local shop had installed solar panels and was charging ₹ 4 to recharge a mobile phone.

As can be seen from the above list, a number of these innovations have been carried out not by phone companies but by users. These examples reaffirm the role of users in carrying out innovations in poor areas to use the new technology.

### Constraints / Challenges

People were also found to face a number of constraints while using mobile

phones like lack of electricity for charging (59.8 per cent), call rates (58.6 per cent), mobile phone handset (30.5 per cent), lack of knowledge of MVAS (31.6 per cent) as given in Table 11 and others such as poor signals, non-functional base stations or mobile towers in the absence of electricity and finally fraudulent money deduction by operators.

**Table 11: Constraints in Accessing Mobile Phone (in percentage)**

Difficulties	Male	Female	Person
High cost of handset	28.8	35.7	30.5
High call rates	56.1	66.7	58.6
Difficulty in mobile phone operation	33.3	52.4	37.9
Difficulty in power (Electric) charging	58.3	64.3	59.8
Inadequate VAS knowledge	32.6	28.6	31.6
Others	3	0	2.3
Respondents (Number)	100 (132)	100 (42)	100 (174)

Note: Percentages do not add to hundred because of multiple responses.

The most common problem is charging of mobile phones, where electric supply is erratic and load shedding occurs for long hours. Some people were found to walk more than 10 km a day just to charge their phones because their villages did not have electricity. They also had to pay more for mobile battery charge than service recharges at local shops (that demanded a price of ₹ 5-10 per charge). Problems were also found to be in terms of call quality and receptivity (as generators were

not switched on during power failures in rural areas, necessary for the functioning of mobile towers).

The revenue of mobile operators in rural areas was found to be low and in order to overcome this they resorted to money deduction even if a call was not connected. The call also gets dropped regularly due to distance and non-functional mobile towers. This entailed additional expenditure and pressure on the mobile phone users in rural

areas. It was also found that a large number of people still did not trust mobile phones because it enabled debtors to lie about their whereabouts; creditors, therefore, preferred making personal visits.

Mobile phones were also found to have certain negative outcomes in traditional, rural societies. Local vendors were found to be earning substantial revenue by selling obscene movie clips (local and other), film songs and MMS, which had gained popularity among the rural teens and youth. Though vendors earned a substantial amount in the process, the use of mobile phones did have a negative impact on 'traditional values' in society particularly girls and women according to some respondents. As discussed earlier, some village councils have banned unmarried women from using mobile phones. These village council members feel that cell phones helped in the elopement of young couples and also receive prank calls frequently besides distracting them from their studies. Concerns were also raised regarding offensive SMS and MMS being circulated to women.

In general, additional expenditure on monthly household budgets due to unnecessary charges and deduction by mobile operators were also found to create lot of tension and pressure. Children in rural areas played games and listened to songs on mobile phones which had a negative impact on their studies. Unnecessary advertisement calls and other messages also proved to be major distractions.

### **Conclusion and Recommendations**

There are numerous usages of mobile phones reported by rural people. There has been improved access to knowledge in agriculture, including non-grain products, such as vegetables and milk production. Besides knowledge, information about market prices secured through mobile phones enabled farmers to choose wholesale markets in which to sell their products or even harvesting of vegetables. The farmers, who use mobile phone for seeking information has reported improved marketing because of better price information. Increasing access to price information would seem to improve the functioning of markets, reducing the spread between prices in different locations. Cost savings were realised by both farmers and petty traders. Farmers could reduce spoilage by harvesting when prices in the market were better. Small traders could fine-tune their supplies according to customers' needs, conveyed over mobile phones.

One area in which mobile phones have had a clear impact is on reducing the role of intermediaries in market relations. Small farmers, who earlier sold to intermediary traders in the village, could not find out details of prices in wholesale markets and take their produce to these markets. The mobile phones have developed to establish a strong linkage with labour-absorbing (Punjab, Haryana, Delhi and other areas) and labour-supplying regions (Bihar, Uttar Pradesh). Intermediaries had played an important role in bringing employers

and workers together; obviously they had a cut for their services. With the mobile phone, employers and workers are in direct contact with each other. Wage rates are easily known and contracts and timing of work are negotiated over the phone.

The role and costs of being an intermediary are reduced, but some new forms of intermediaries also arise. Locally, landowners contact leaders of worker groups, who then gather together the required groups of workers. Search cost is reduced on both employer and worker sides. Economic networks become denser, with multiple interactions between employers and workers. Market functioning has become more efficient, with a reduction in search-related transaction costs.

Remittance is one of the main reasons for migration from rural to urban areas or metros. Mobile phone-based remittances, whether through formal channels or informal networks, have become cheap and safe. Remittances are made regularly and do not have to be made just during a home visit. Returning migrants were known to be carrying money and thus were easy targets for robbery. Mobile phone-cum-ATM-based remittances have eliminated this risk and thus increased the real returns from migration.

The most important impact this study found is that of networking, a topic that has been neglected in the study of the impact of mobile phones in India. Networks are both

economic and social, the latter usually based on familial and kinship relations. Economic networks are connected to improve market functioning. There are now greater connections between buyers and sellers, whether in product or factor (labour) markets. The mobile phone enabled both direct connections and larger numbers of intermediaries and could reduce the margin that intermediaries used to get. The mobile phone is particularly important in sustaining familial relations in multi-locational households with at least one migrant. Mobile phone has made it possible for migrants and their families to remain in regular touch.

Being allowed to keep or use a mobile phone has become a matter of struggle for young women in rural area. Many village councils have banned unmarried women for having or using phones. Traditional social norms prohibit pre-marital contact between young women and men, and certainly those between members of different castes. In conjunction with educational institutions, which bring together young people of various castes, the spread of mobile phones has also made it easier for young women and men to develop relations that go against traditional and caste-based norms. The mobile phone enables a privacy of communication, otherwise it is quite absent in rural India (Jeffrey and Doron, 2013). It has helped to disrupt traditional social relations.

Overall this paper revealed that mobile phone has reduced the cost of accessing information, as the search is carried out over

the phone. The mobile phone enabled rural people to access knowledge about crop and livestock rearing. The mobile phone also enabled small producers to reduce their transportation and wastage costs by making deliveries more in line with the demands of consumers. The access to market information through mobile phone has reduced transportation and transaction costs, and enhanced interaction between buyers and sellers. In the fields of employment, education and health too, mobile phones have increased access. They have helped migrants' households to keep in touch and remit money in safe and secure ways. Mobile phones enabled the

development of social relations in non-traditional ways, although conservative sections of rural society often opposed their use by young women and girls. The issue of changes in networks and social relations enabled by mobile phones came out clearly in the study.

The study findings suggest for awareness about m-value added services, availability of low-cost mobile phone sets, regular power supply or provision of alternative power like solar power, penalty provisions to operators for non-functional towers and money deductions without any call.

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**References**

1. Abraham, R. (2006), "Mobile Phones and Economic Development: Evidence from the Fishing Industry in India", Proceedings of the International Conference on Information and Communication Technologies and Development, Berkeley, CA. 25-26 May.
2. Aker, J.C. and Mbiti, I.B. (2010), "Mobile Phones and Economic Development in Africa", *Journal of Economic Perspectives*, 24(3), pp. 207-232.
3. Bihar Economic Survey, 2014-15, Ministry of Finance, Government of Bihar, 2015.
4. Islam, S. (2011), "Evaluation of an M-Service for Farmers in a Developing Region - A Case Study from Rural Bangladesh", *Media Asia* 38(1), pp. 41-51.
5. Jeffrey, R. and Doron, A. (2013), "Cell Phone Nation: How Mobile Phones Have Revolutionized Business, Politics and Ordinary Life in India", Gurgaon, Hachette.
6. Jensen, R. (2007), "The Digital Divide: Information (Technology), Market Performance, and Welfare in the South Indian Fisheries Sector", *Quarterly Journal of Economics*, 122(1), pp. 879-924.
7. Meera, S.N., Jhamtani, A. and Rao, D.U.M. (2006), "Information and Communication Technology in Agricultural Development: A Comparative Analysis of Three Projects from India", Network Paper 135, London, ODI.
8. Mittal, S., Gandhi, S. and Tripathi, G. (2010), "Socio-Economic Impact of Mobile Phones on Indian Agriculture", Working Paper 246, New Delhi, ICRIER.
9. Rodgers, G, Datta, A, Rodgers, J, Mishra, S, Sharma, A. (2013), "The Challenge of Inclusive Development in Rural Bihar", Institute for Human Development, Manak Publications, New Delhi.
10. Souter, D., Garforth, C., Jain, R., Mascarenhas, O. and McKemey, K. (2005), "The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A Study of Rural Communities in India (Gujarat), Mozambique and Tanzania", KAR Project 8347, London, DFID.
11. TRAI (Telecom Regulatory Authority of India) (2015), "Telecom Subscription Data 31st March, 2015", Available at <http://www.trai.gov.in> (accessed on 15 July, 2015).

**Annexure I**

Distribution of Total Number of Households Covered under the Census and the Number of Households Covered under the Sample Survey

District	Village	Number of Households	Mobile Phone HHs	Sample Size
Gaya	Alalpur-Bishnupur	185	55	11
	Salempur-Rupaspur	436	140	28
Gopalganj	Paharpur Daya	84	75	15
	Dewanparsa	289	150	30
Madhubani	Mahisan	1490	560	56
	Khangaon	731	450	45
Nalanda	Chandkura	446	125	25
	Mohiuddinpur	111	50	10
Purnea	Jitwarpur	1296	1040	104
	Belabadan	356	160	32
Rohtas	Samhutibuzurg	280	100	20
	Amarhi	230	90	18
Total		5934	2995	394

Note: In this study, only member (of sample households) having access to a mobile phone was interviewed.

Sample to select every 10th item on the list by using random numbers to pick up the unit with which to start, for instance if 10 per cent sample is desired, the first item would be selected randomly from the first 10 and thereafter every 10th item would automatically be included in the sample. If the selected sample is not available, it can be replaced by the next item like 10 can be replaced by 11th and so on.