The Pharma Innovation Journal 2021; SP-10(8): 734-738

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(8): 734-738

www.thepharmajournal.com
Received: 10-07-2021
Accepted: 13-08-2021

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Relationship between independent variables with those of dependent variables of the cell phone usages farmers in Kanpur Dehat district of U.P.

Shalu Gautam, RK Doharey, NR Meena and Atul Kumar

Abstract
This study was conducted in Akbarpur, Maitha, Sarwankhera and Jhinjhak block of Kanpur Dehat district of Uttar Pradesh to know the study and importance of cell phone usages for empowerment of rural farmer's during the year 2020-21. A total number of 400 farmers were selected randomly from a list of 20 randomly selected villages. The structured schedule was developed keeping in view the objectives and variables under study. The respondents were contacted personally for data collection. The analysis of data was done by using the percentage, mean, standard deviation, and correlation coefficient for drawing the inferences. The study furnish that most of the independent variables were positively correlated and highly, moderately significant with the dependent variables i.e. knowledge and empowerment.

Keywords: variables, mean, standard deviation, correlation, cell phone, respondents

Introduction
A cellular phone is a telecommunication device that uses radio waves over a networked area (cells) and is served through a cell site or base station at a fixed location, enabling calls to transmit wirelessly over a wide range, to a fixed landline or via the Internet. In this networked system, the cellular phone is identified as a mobile system consisting of the equipment and SIM card that actually assigns the mobile telephone number.

A cellular phone is also known as a cell phone or mobile phone. It enables a user to communicate almost anywhere in the world. The cell phone was invented by Dr. Martin Cooper, along with his team of developers at Motorola.

The first cell phone weighed 2.4-pounds and was 9-inches long. Dr. Cooper also made the first cell phone call at Motorola on April 3, 1973.

India has 1,026.37 million active mobile users on 2G, 3G and 4G networks – in 2018, TRAI statistics report. Total mobile subscriber base including active and inactive users has reached 1,176 million in2018. The proportion of active subscribers was approximately 87.28 percent of the total wireless subscriber base.

Bharti Airtel has the maximum proportion (98.68 per cent) of its active wireless subscribers. Vodafone Idea has 93.33 percent active mobile phone customers on its network. Reliance Jio has 83.59 percent active customers on its 4G network. BSNL has 56.20 percent active mobile users in 2018.

Mobile customers in urban areas reached 647.52 million. India has 528.48 million mobile users in rural areas. Mobile phone density in India was 89.78 in 2018. Mobile service tele-density was 155.48 in urban areas and 59.15 in rural areas.

Information delivery system is the one of the main components for dissemination of knowledge or new technology. Information gap has been recognized as one of the important constraints in the overall agricultural development of the country. Indian agriculture had been on traditional lines till the first waves of green revolution in late 60s. The green revolution gave a sudden boost to the production and productivity of major cereals in the assured irrigated areas. Quick dissemination of technological information from the Agriculture Research System to the farmers in the fields and reporting farmers' feedback to the research system is one of the critical inputs in transfer of technology.

To increase the farm production, the farmers need to be informed on recent scientific farm innovations. Farm information and technology dissemination to the farmers provides opportunities for their self-development, improves existing knowledge, skills and enhances their capability. In this connection, Information and Communication technologies (ITCs) hold lot of promise to deliver agricultural knowledge to the farmers.

In order to provide agricultural extension services through ICTs, it is necessary to assess the information needs of the farmers so as to prepare and deliver specific messages or technologies and also to develop ICT based training modules as per the need and requirements of farmers.

KVK imported learning through work experience and it's concerned with technical literacy. KVK imported training to practicing farmers and farm women. The KVK catered to the needs of those who are employed and those who wish to be self-employed. The main activities of KVK is to update the technical Knowledge and Skills of the farming communities and to train the farmers and farm women in scientific farming and allied fields like Crop production, Seed production, Horticultural crops, Dairy, Fisheries, Agro forestry and other enterprises.

Information and Communication Technologies (ICTs) can accelerate agricultural development by facilitating knowledge management. Mobile phone is the important ICT tool for faster dissemination of technology almost 70 percent of the world's mobile phone subscribers are in developing world. As an affordable and accessible means of communication, both men and women are realizing the potential of this technology to create economic opportunities and strengthen social network in rural areas.

ICTs have been shown to play an important role in improving education, livelihoods, poverty, agriculture, trade and health as it can contribute to better access to information and subsequently, markets and production (Rao, 2006). The mobile phone is one of the most exciting forms of ICTs, which has the potential to allow countries to leapfrog older technologies and begin converging with the rest of the world in terms of economic performance. It significantly reduces communication and information costs for the rural poor on agricultural technologies (Coyle, 2005).

The features of communication technologies can be found its quality and timeliness which can make farmers enable to use agricultural information effectively the study was conducted in India also found that mobile phone plays an important role in the contribution of farmers 'productivity and able to find good price of their product. While another study revealed about Kenya that in the flood situation mobile phone SMS service also played key role to save the crop of farmers and send alert messages to each other's. Information technologies also reducing the risk of farmers and providing more opportunities to access the market and also providing place to communicate with customers directly through mobile phones. The world is speedily transferring information about everything of the society and people are connected with each other globally. Information and communication technologies plays a role of bridge among different communities such as farmers now can get easily information about their produce by internet from any place of the world. In the context of the Nigeria government facilitating farmers and providing easy access and information of market from mobile networking services in remote areas. In modern information and communication technologies such as 3G, 4G internet, Email, Facebook, Twitter and many other social media can also have provided lot of information about the agriculture even there are many online programs are available where farmers can get benefit and also apply such applications and methods in their own land for better product of crops. YouTube is also one of the best sources of getting latest information about agriculture development. Unfortunately, farmers have no proper knowledge and education about techniques and use of technologies in their working places. It could prove that mobile phone was very powerful tool in providing basic information about agriculture. The level of usage of cell phone spreading rapidly in developing countries for the purpose of business, education and agriculture development.

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.

Agricultural information is a key component for increasing agricultural production and productivity that leads to improved rural livelihoods and food security. In order to counter recent decelerating growth rate of agriculture, the challenges of infrastructural constraints, supply chain inefficiencies, and diffusion and access to information are to be addressed. In this context, increasing penetration of mobile network and widespread use of mobile phones, voice mail and SMS solutions could be an opportunity to make useful information available at the farmers' doorstep. In West Bengal, IFFCO Kisan Sanchar Limited (IKSL) made an endeavor to disseminate information and knowledge amongst the farmers through voice messaging system in local language. However, its relevance, quality and timeliness have been an issue of serious concern to the farmers. The study was conducted with sixty randomly selected farmers, who were using IKSL Green Card, from two blocks of Paschim Medinipur district, West Bengal. The result of the study revealed considerable contact of farmers with the progressive farmers (43.3%) followed by IKSL (40.0 %) and input retailers (28.3%). In respect of frequency, quality and timeliness of the information provided by IKSL, farmers ranked fertilizer, pesticide and seed as Ist, 2nd and 3rd. Market information of agricultural produce was rarely covered by IKSL service. Farmers were mostly benefited from voice mail in adopting better agricultural practices followed by increased production and revenue, change in cropping pattern and connection to market. One of the most important developments in the past decade was the rapid growth of the mobile phone use around the world. Mobile phones have empowered developing countries to spread information networking coverage in the remote areas and rural areas are getting great benefit out of it.

In India, Bangladesh, Pakistan, Malaysia, Indonesia, Philippine, Vietnam and Sri Lanka, the extensive use the technology has made direct contribution to agricultural productivity as well as income of small holding farmers. Nowadays, remote sensing, satellite system and geographical information system GIS enhance the capacity of farmers in remote areas. In this context, influence of ICT brought changes in efficiency of market to improve the productivity, easy access and approach to contact with buyers in market. According to the farmers' agricultural information and

economic conditions have been improved after using some communication technologies. Now small holders were saving much amount to use transport to reach market for getting the information and price of their product and only one dial using mobile phones and obtaining latest information on spot. Improving the information, communication, business, and Internet resources available to farmers and to the markets, organizations, and institutions they interact with is essential to making smallholder agriculture more productive. The proper use of information and communication technologies (ICT) is central to this improvement. Information and communication technologies also played a role in business and large scale of agriculture related services as well as these technologies provides weather and irrigation system information. It was showed that different elements of the communication networks have improved transaction in developing countries for instance in Ghana ICT helped network of rural banking and increased their efficiency and expand their services and overall population of farmers. Similarly, it was also indicated that ICT has provided facilities of different business models for offering economic and financial service to smallholders. ICT is the tool of different system, which has brought a remarkable change in daily life of people. Information communication technology has created new revolutionary changes in organizations and introduced new ways of doing in business and makes an innovative thing. This technology played venerable role in developing countries and stable the economic conditions of poor farmers. There is no doubt that communication technology used very frequently among farmers and it empowers the resources of poor farmers and provided latest updates regarding agriculture information and their related issues. Furthermore, by mobile phone farmers are touch with market and obtained trends of price, weather information.

For development of agriculture it is necessary to reform agricultural extension system that is under-funded, highly compartmentalized and has several inherent weaknesses. The use of ICT is the only way to bypass several stages and sequences in the process of agricultural development. Mobile phone that is a tool of ICT is widely recognized as a potentially transformative technology platform for developing nations. Mobile phone technology has much less requirement on the infrastructure and hence wider applicability especially in mountainous areas. Mobile phones enable both audio and video functions which can meet most of the basic needs of the poor. It also has greater affordability for the farmers than internet. It has provided producers with information and knowledge on the correct market price, quantities, availability of a particular product and technical advice. In many developing countries more than 80 per cent of the population has access to mobile phones. Jensen (2007) demonstrated that the ICT helped fishers along the coastline in Kerala, India learn about prices at different locations and decide where to sell their products profitably. As a result, price volatility and variation dropped; producer prices rose and at the same time consumer prices dropped. Aker (2008) studied the impact of the mobile phone rollout on grain markets in Niger and show that mobile phone service has reduced grain price dispersion across markets by a minimum of 6.4 percent and reduced intra-annual price variation by 10 per cent. But there are many factors like lack of awareness of the utility of communication technologies for agriculture development, language, illiteracy, poor signal, high cost and unavailability of electric power were the major constraints, poor ICT infrastructure development, high cost of broadcast equipment, high cost of access / interconnectivity and electricity power problems, fluctuating telecommunication services, inadequate access to mobile services, etc.

Methodology

The selection of the district Kanpur Dehat was selected purposively as locale for present investigation because researcher is well acquainted with the locality and culture. Secondly the most of the farmers are using cell phone as agro-based advisory services due to the collaboration of IIT, ATARI and CSAUAT Kanpur. Kanpur dehat district has a total number of ten blocks namely Akbarpur, Amrodha, Derapur, Jhinjhak, Maitha, Malasa, Rajpur, Rasulabad, Sandalpur and Sarvankheda out of these, four blocks Akbarpur, Maitha, Jhinjhak and Sarvankhera were selected purposively. Five villages from each block were selected hence that total number of twenty villages were selected randomly for the study. Selection of the farmers was done by simple random sampling method and 20 farmers from each village were selected to make a total sample size of 400 farmers.

Table 1: Correlation coefficient (r) between different independent variable and general knowledge of cell phone and empowerment.

Table 1: Correlation coefficient (r) between different independent variable and general knowledge of cell phone: n=400

S.N	Variables	Correlation coefficient
1	Age	-0.319065877**
2	Education	0.157729142*
3	Caste	-0.036348337
4	Marital status	-0.256017173**
5	Family type	-0.019539782
6	Family Size	-0.100465131
7	Land holding	-0.072492637
8	Occupation	0.213211456**
9	Annual income	0.149721588*
10	Material possession	0.265712564**
11	social participation	0.200500938**
12	Housing pattern	0.15935505*
13	Extension of contact	0.163186944*
14	Ownership of cell phone	0.158573335*

*Significant at 0.05 Percent probability level 0.139
** Significant at 0.01 Percent probability level 0.182

Table-1 focuses that the out of 14 variables studied, three variables namely material possession, occupation and social participation had highly significant and positive correlation with extent of knowledge of respondents about using cell phone. The variable like age and marital status were highly significant and negatively correlated with the knowledge using of cell phone. The variable i.e. housing pattern, extent of contact, education, ownership of cell phone and annual income positively correlated and moderately significant with the knowledge using of cell phone. Other variables *viz*., caste, family type, family size and land holding were negatively correlated and insignificant with extent of use of cell phone.

Hence, it means that if the variables namely material possession, social participation, housing pattern, extent of contact, education, annual income and ownership of cell phone increases, the extent of knowledge about using of cell phone of the respondents also increases.

Table 2: Correlation coefficient (r) between different independent variable and social empowerment: n=400

S. No.	Independent Variable	Correlation
1	Age	-0.339704114**
2	Education	0.182050669*
3	Caste	0.141403241*
4	Marital status	0.05828498
5	Family type	0.036115596
6	Family Size	-0.053799222
7	Land holding	0.215585877**
8	Occupation	0.18932123**
9	Annual income	-0.005835204
10	Material possession	0.261544385**
11	social participation	0.212046251**
12	Housing pattern	0.076707449
13	Extension contact	0.274688659**
14	Ownership of cell phone	0.325460804**

*Significant at 0.05 Percent probability level 0.139
** Significant at 0.01 Percent probability level 0.182

Table 2 focuses that the out of 14 variables studied, 6 variables namely ownership of cell phone, extension contact, material possession, land holding, Occupation and social participation had highly significant and positively correlated with extent of social empowerment of the respondents about using of cell phone. Only one variable i.e. age was negatively correlated and highly significant with extent of social empowerment of the respondents about using of cell phone. The variables education and caste positively correlated and moderately significant with extent of social empowerment of the respondents about using of cell phone. Whereas housing pattern, marital status and family type positively correlated and insignificant with extent of social empowerment of the respondents about using of cell phone and, family size, annual income found negatively correlated and insignificant with extent of social empowerment of the respondents about using of cell phone.

Table 3: Correlation coefficient (r) between different independent variable and technical empowerment: n=400

S.N	Variables	Correlation coefficient
1	Age	-0.07769394
2	Education	0.278080471**
3	Caste	0.06204243
4	Marital status	-0.02860794
5	Family type	0.139886132*
6	Family Size	-0.077412955
7	Land holding	0.041765312
8	Occupation	0.18532112**
9	Annual income	0.141045752*
10	Material possession	0.231148986**
11	social participation	0.235561899**
12	Housing pattern	-0.103558706
13	Extension contact	-0.041825781
14	Ownership of cell phone	0.237751871**

*Significant at 0.05 Percent probability level 0.139
** Significant at 0.01 Percent probability level 0.182

Table 3 reveals that out of 14 variables, five variables namely education, ownership of cell phone, social participation, occupation and material possession had highly significant and positive correlation with extent of technical empowerment of the respondents about using cell phone. Only two variable i.e. family type and annual income were moderately significant and positive correlation with extent of technical empowerment of the respondents about using cell phone. Other variables *viz*., caste and land holding were positively correlated and insignificant with extent of technical empowerment of the respondents about using of cell phone and housing pattern, extent of contact, age, marital status were negatively correlated and insignificant with extent of technical empowerment of the respondents about using of cell phone.

Table 4: Correlation coefficient (r) between different independent variable and economic empowerment: n=400

S.N	Variables	Correlation coefficient
1	Age	-0.2277378**
2	Education	0.1402670*
3	Caste	0.0314856
4	Marital status	-0.0351334
5	Family type	-0.0004098
6	Family size	-0.0617919
7	Land holding	0.1559911*
8	Occupation	0.2342125**
9	Annual income	0.2141516**
10	Material possession	0.527893755**
11	Social participation	0.21268981**
12	Housing pattern	0.18556693**
13	Extension contact	0.299935037**
14	Ownership of cell phone	-0.01998499

*Significant at 0.05 Percent probability level 0.139
** Significant at 0.01 Percent probability level 0.182

The table 4 reveals that out of 14 variables studied, six variables namely material possession, extent of contact, annual income, social participation, occupation and housing pattern highly significant and positive correlation, whereas age was highly significant and negatively correlated with extent of economic empowerment of the respondents about using of cell phone. The variables like land holding and education moderately significant and positively correlated with extent of economic empowerment of the respondents about using of cell phone. Only one variable i.e. caste was insignificant and positive correlation with extent of economic empowerment of the respondents about using cell phone. Other variables i.e. ownership of cell phone, family size, marital status, and family type were insignificant and negatively correlation with extent of economic empowerment of the respondents about using cell phone.

Table 5: Correlation coefficient (r) between different independent variable and political empowerment:

S.N	Variables	Correlation coefficient
1	Age	-0.1426939*
2	Education	0.3780804**
3	Caste	0.16204243*
4	Marital status	-0.0186079
5	Family type	0.13988613*
6	Family Size	-0.07741295
7	Land holding	0.241765312**
8	Occupation	0.18433212**
9	Annual income	0.237045752**
10	Material possession	0.22648986**
11	social participation	0.33756189**
12	Housing pattern	0.14355870*
13	Extension contact	0.320825781**
14	Ownership of cell phone	0.219751871**

*Significant at 0.05 Percent probability level 0.139
** Significant at 0.01 Percent probability level 0.182

The table 5 reveals that out of 14 variables studied, eight

variables namely education, social participation, extension contact, land holding, material possession, annual income, occupation and ownership of cell phone highly significant and positive correlation with extent of political empowerment of the respondents about using of cell phone. Only one variable i.e. age was negatively correlated and moderately significant whereas caste, housing pattern and family type were positively correlated and moderately significant with extent of political empowerment of the respondents about using of cell phone. Other variables like family size and marital status were negatively correlated and insignificant with extent of political empowerment of the respondents about using of cell phone.

Hence, it is concluding that education, social participation, extent of contact, land holding, material possession, annual income and ownership of cell phone had positive effect on the political empowerment of the respondents which using of cell phone.

Acknowledgement

I acknowledge to the Department of Extension Education, Acharya Narendra Deva University of Agriculture &Technology, Kumarganj, Ayodhya for providing all short of facilities required for conducting this research.

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