

Factors Affecting Techno-economic Empowerment using Digital Tools by Farmers in Central India

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Abstract: Digital tools are one of the most significant ICTs that contribute to farmers' adoption of agricultural advances throughout the world. The present study was confined to determine the parameters impacting mobile phone usage as a source of agricultural information for farmers and the goal of this study was to pinpoint the key variables that have a significant impact on how farmers in the agricultural sector use digital tools. Primary data were collected in Rewa district of Madhya Pradesh in 2019.

Findings discovered that affecting of techno-economic empowerment among farmers is major personal factors were arranged in descending order on the basis of rank order as heavy workload on family work (25.8%). In case of social factors, No proper encouragement (4.16%), Heavy expenditure on family (14.16%) and less involvement in community work (80.84%). In economic factors Lack of savings (25 %) and Lack of involvement in marketing (33.33%), As far as technological hindering factor Lack of training (48.34%). Regarding the operational hindering factors were found Hang of android while operating (28.33%) and Unable to decide which option to click (35.01%). This study suggests that agricultural extension increase its efforts to encourage farmers to embrace ICT tools, such as digital technology.

Keywords: Digital extension, Agriculture, assessment, empowerment and digital tools etc.

INTRODUCTION

In order to improve digital literacy and connect rural areas to high-speed Internet networks, Digital India was established. The government of India focuses specifically on nine pillars, including the Broadband Highway, Public Internet Access Programme, Universal Access to Mobile Connectivity, E-Governance, Revolutionizing Government Through Technology, E-Kranti, Digital Delivery of Services, Information for All, Electronics Manufacturing, IT for Jobs, and Early Harvest Programs. Other recent digital services offered by the Indian government include the National Scholarship Portal, e-Health, e-Education, and Digital Locker. Both front-end and back-end digitization technologies are present in government online services. Digital

Infrastructure as a Utility to Every Citizen, Governance & Services on Demand, and Digital Empowerment of Citizens are the three main pillars of the Digital India program's vision of inclusive growth in the areas of electronic services, products, manufacturing, and job opportunities, among other things.

There are facilities to digitally empower citizens and especially to farming community like Digital Locker-that will help farmers to store important personal documents. E-Sampark, a vernacular e-mail service where e-mail services are provided in vernacular language is among the many. On the training front- PM Gramin Digital Saksharata Abhiyan launched with an outlay of Rs.68 crores with an objective of making 6 crores households digitally literate by March 2019.

Each farmer's farm products value system needs agricultural services like agricultural advisory, financial services, agricultural marketing, and risk transfer, and India is fortunate to have access to about 400 farm products value system. Various national programmes, including Make Digital India 2015, In India 2015, Startup India 2015, Stand Up India 2015, and Skill India 2015 have encountered operational challenges due to their influence at the agricultural and farmer levels, particularly at the level of small and marginal farmers (Moni, 2019).

Agriculture's electronic extension services are referred to as digital extension. It is a network of organizations that offers traders and farmers more effective information for the agriculture, fishing, and natural resource industries. The ICAR mandates for KVKs in India include the provision of agricultural advisories using ICT and other media on a variety of topics of interest to farmers.

India's digital story is one of an ICT - led development by use of technology that is affordable, inclusive and transformative. The Digital India Programme aims to transform India into a knowledge-based economy and a digitally empowered society. The digital India Programme is a flagship programme of Government of India with a vision to transform India into a digitally empowered farmer and knowledge economy.

Digital Extension is component of Digital India. It is a flagship programme of Government of India with a vision to transform India into a digitally empowered farmer community and knowledge economy. Under this program various projects e.g. Open Data, Soil Health Card, mKisan (mFarmer), Farmer Portal, Agrimarket app, etc. have been launched for farmers. Other programs e.g. Kisan Suvidha, e-Pusa Krishi, AgriApp, KrishiGyan, agropedia, e-krishi, e-chaopal etc. based on digital information for farmers have been started in India (Digital India, 2018)

Digital delivery of services has been strengthened with the help of 3.47 lakh Common services Centre's (CSCs), spread across 2.3 lakh Gram Panchayats in the country that provides digital access to over 350 services especially in rural areas at an affordable cost. These centres

have also led to empowerment of marginalized sections of the society by creating jobs for over 12 lakh people and by promoting rural entrepreneurs including women VLEs. CSCs have also undertaken Stree Swabhiman initiative to create awareness about menstrual health and have set up over 204 sanitary pad units (Prasad, 2019).

In many countries today, leaders see lagging (or no) growth, sagging employment and rising underemployment. While they recognize that the Internet is not a magic bullet, these leaders believe that the Internet, and its associated digital technologies (products and services that facilitate the creation, storage, analysis and sharing of data and information), might be a potential economic savior (Chakravorti *et al.* 2015).

Digital technologies can also enhance human welfare. The World Bank found that "rapid penetration of digital technologies is changing the lives of the poor." These technologies have empowered small farmers to search and sell in more markets and to interact with government without travelling long distances, visiting multiple government offices or paying bribes (World Bank 2014, 2).

Agricultural extension services delivery in India have limited scale, sustainability, and impact. On an average public extension services only reach 6.8 per cent of farmers (GFRAS, 2012). NSSO, 2014 has indicated that of the 40.6 per cent households who received extension assistance, only 11 per cent of the services came from physical government machinery extension agents, Krishi Vigyan Kendras and agricultural universities. This gap needs to be filled through exploring other options of alternate agricultural extension service delivery mechanisms. Information and Communication Technologies (ICTs) can deliver agricultural extension information with greater ease, more rapidly and with higher accuracy (Goyal, 2011, Karthikeyan, 2012 and World Bank, 2016). These technologies are reviving agricultural extension and advisory services around the world (World Bank, 2016). ICT based applications in agriculture have varied from web portals, telecentres, mobile telephony and hybrid projects (ICTs with traditional extension elements) (Shanthinichandra *et al.*, 2013). Mass

media including internet is now the second most important source of useful information to agricultural households in India (NSSO, 2014). Moreover, ICT interventions have received encouragement from the Indian Ministry of Agriculture (ICAR, 2016). Recently two mobile apps were launched on crop insurance and agrimarket (GOI, 2015). Social media is yet another ICT based tool, which once used purely for entertainment, has great potential to be used for knowledge sharing and collaboration even in agriculture (Goyal, 2011).

The existing farm extension system needs to be broad based problem oriented as depicted, to help farmers overcome their “point of no return” difficulties. ATMA and KVK are the two eyes of the present extension system which further require a “third eyes” for problem resolution, may be ICT enabled Agricultural Polytechnics for bridging the emerging gaps in development of human resources for farm level functionaries (Moni, 2019)

Physical stores, online stores have many advantages: They are convenient and time saving and no more travelling and waiting in lines is needed. They are open in all time and they are accessible anytime and anywhere. These stores provide consumers with free and rich information about products and services. They also have some online tools to help consumers compare and make purchase decisions among various products and services (Javadi&Dolatabad, 2012).

Challenges of Digital Tools

The common problems in the adoption of digital tools in rural areas are ICT illiteracy, availability of relevant and localized contents in their own languages, easy and affordable access and other issues as awareness and willingness for the adoption of new agricultural technologies among the rural peoples, etc.

RESEARCH METHODOLOGY

Madhya Pradesh is known as “The heart of India”. The state is bound on the north by Uttar Pradesh, the east by Chhattisgarh, the south by Maharashtra and the west by Gujarat and Rajasthan. The present study was confined with the farmers using digital inventions i.e.

android application. Rewa district was selected for the present study as having presence of reputed institutions like Agriculture College, KVK and IFFCO. It comprises of nine blocks namely Rewa, Sirmour, Mauganj, Gangeo, Hanumana, Teonthar, Naigarhi, Jawa and Raipur Karchuliyan. The research design adopted for the study was ex-post facto, because a pre-existing characteristic was used. For the study two blocks namely Rewa and Naigarhi were selected purposively on the basis of higher number of registered farmer's friend under ATMA, Farmer welfare and Agriculture Development Department. Sixty farmers were selected from each block for the study. Out of each block six villages were selected near by the block level administration office. From the Rewa block six villages namely Bajrangpur, Gadhwaha, Kanauja, Laxmanpur, dihi and khaur and from Naigarhi block six villages namely dubaha, chapgawan, tatiharakhurd, purwa, devrisinger and barroha. Ten farmers from each village were selected purposively. Thus the sample consisted of 120 respondents. So, sample size was $n=120$. The technique involved in the analysis of data is very simple. For each item, responses given by the respondents regarding the question were recorded. These recorded data were counted in terms of frequency and percentage. After total counting of frequencies, the percentages were calculated. After the percentage and frequency calculation and mean were calculated. The data collected from respondent were manually processed. Each respondent was serialized and information received from him/her tabulated on a master table sheet. Weightage was given to different item with regard to their relative position in the scale and scoring was done accordingly. The data was analyzed and interpreted. For the present study the factors affecting techno-economic empowerment of farmers and Constraints faced by the farmers using digital tools.

RESULT AND DISCUSSION

Analyze the factors affecting techno-economic empowerment of farmers

The respondents were asked to express the factors experienced by them in relation to techno-

economic empowerment among the farmers. The major factors faced by them have been presented under four sub headings like personal, social, economic, technological, operational while using android phone.

Table 1: Analyze the factors affecting techno-economic empowerment of the farmers N=120

S. No.	Factors	Freq- uency	%	Rank
	Personal			
1	Non-cooperation from family members	12	10	IV
2	Literacy	15	12.5	III
3	Heavy workload on family work	31	25.8	II
4	Lack of confidence	62	51.7	I
	Social			
1	Lack of mobility	01	00.84	IV
2	No proper encouragement	05	4.16	III
3	Heavy expenditure on family	17	14.16	II
4	Less involvement in digital platform	97	80.84	I
	Economical			
1	Complexity of getting loan	07	5.84	VI
2	Uneven economic status	08	6.66	V
3	Problems of repayment of loan	15	12.5	IV
4	Unawareness about the rules of bank	20	16.67	III
5	Lack of savings	30	25	II
6	Lack of involvement in online buying	40	33.33	I
	Technological			
1	Lack of skill and knowledge	22	18.33	III
2	Lack of technological information center	40	33.33	II
3	Lack of training	58	48.34	I
	Operational			
1	Don't know how to search in search engine	18	15	IV
2	Low speed data connection	26	21.66	III
3	Hang of android while operating	34	28.33	II
4	Unable to decide which option to click	42	35.01	I

The major personal factors were arranged in descending order on the basis of rank order as Non-cooperation from family members (10%), Literacy (12.5%), heavy workload on family work (25.8%) and Lack of confidence (51.7%).

In case of social factors, Lack of mobility (00.84%), No proper encouragement (4.16%), Heavy expenditure on family (14.16%) and less involvement in community work (80.84%).

In economic factors, Complexity of getting loan (5.84%), Uneven economic status (6.66%), Problems of repayment of loan (12.5%), Unawareness about the rules of bank (16.67%), Lack of savings (25 %) and Lack of involvement in marketing (33.33%),

As far as technological hindering factors were encountered Lack of skill and knowledge (18.33%), Lack of technological information center (13.33%) and Lack of training (48.34%).

Regarding the operational hindering factors were found Don't know how to search in search engine (15%), Low speed data connection (21.66%), Hang of android while operating (28.33%) and Unable to decide which option to click (35.01%).

CONCLUSION

Every technology in the world is like two sides of the coin, each and everything has benefits as well as constraints. It is beyond any doubt that Information and Communication Technology is the gift of science. Along with all the benefits, there are certain problems, which the user faces in his or her day-to-day life. Results of the study indicated that constraints faced by farmers of different types in varying degrees. Major personal factors were arranged in descending order on the basis of rank order as heavy workload on family work. In case of social factors, No proper encouragement, Heavy expenditure on family and less involvement in community work. In economic factors Lack of savings and Lack of involvement in marketing, As far as technological hindering factor Lack of training. Regarding the operational hindering factors were found Hang of android while operating and unable to decide which option to click. On the basis of PFI it was observed that Inadequate government digital service centers & facilities ranked first followed by Quality of Information, Lack of awareness towards benefits of ICT in Agriculture, Lack of knowledge on e-Agriculture, Lack of Training, Expensive to use, Inadequate ICT Experts, Lower Internet Speed and Apathy towards new. All these constraints could be overcome through proper implementing suggestions by farmers like; proper and improved infrastructural facilities at the village level, providing relevant

information time to time and skill development updating with training, creating awareness regarding use of digital tools for educational and agricultural purpose

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