



Research Article

ANALYTICAL STUDY ON DIGITAL EXTENSION AMONG FARMERS: SOCIO-ECONOMIC AND COMMUNICATION STATUS IN MADHYA PRADESH

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Abstract: The present paper attempts to examine the socio-economic and communication status of the respondents in Rewa district of Madhya Pradesh in the year of 2019-20. The study was conducted in 12 villages located at Rewa and Naigarhi block of Rewa district. Data for the study was collected from a sample of 120 respondents. The findings of the study revealed that 45.84 percent belong to middle age of respondents, cent percent respondents had male in the study area, (40%) attained graduate, followed by High school (20.83%) of respondents, 80 percent were belong to nuclear family, 20 percent belong to joint family, majority of respondents had small landholding (45.83 percent) followed by marginal landholding (40 percent), majority of family had Rs. 30,000-50,000/- per month (58.33 percent) followed by family had Rs. 20,000-30,000/- per month (20.84 percent), more than Rs. 50000/- per month (16.67 %) and only 4.16 percent family had less than Rs. 20,000/-per month, majority of family had one membership in organization (90 percent), respondent had pakka house (66.67 %) and (33.33 %) had kachcha house, respondents had medium (66.67 %) farm power materials, respondent had medium (62.50 %) material possession followed by high (19.16 %) and (18.34%) had low material possession, majority of respondent had medium (71.67%) Information management Behavior, majority of respondent had medium (81.67 percent) Decision making abilities, (77.50%) had medium level of aspiration followed by 12.50 percent low and 10.00 percent had high level of aspiration, 76.66 percent respondent had medium achievement motivation this leads to understanding that they had motivated about their work and use of technology in future and 74.17 percent respondent had medium communication behavior of the respondents.

Keywords: Socio-economic, Communication, Digital extension, Digital network, ICT, Empowerment and social media

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Introduction

Agricultural services such as agricultural advisories, financial services, agricultural marketing and risk transfer are required for each Agricultural commodity Value System (AVS) of a farmer and India has been blessed with about 400 Agricultural commodities Value system. Many national level programmes, viz, Digital India 2015, Make. In India 2015, Skill India 2015, Startup India 2015 and Stand Up India 2015 have faced operational difficulties for its impact at farm level and farmer level, and that too at small and marginal farmers level [1].

Digital extension is the electronic extension services to agriculture. It is a network of institutions that provide a more efficient information to farmers and traders for i.e. agriculture, fisheries and natural resources sectors. ICAR includes the provide farm advisories using ICT and other media on varied subjects of interest to farmers mandates in KVKs in India.

Computerized organize for farmers - AGRISNET, FISHNET, APHNET, FETNET and so on., envisioned by the ISDA-95 gathering held at Vigyan Bhavan (New Delhi), was seen as a quality, riches and thriving for cultivating family units in India, of which the Marginal scale farmers are around 18 percent, the semi-medium scale farmers are around 10 percent the medium scale farmers are about 4.3 percent, and the huge scope farmers are about 0.7 percent. The ISDA-95 Informatics Blueprint for Agricultural Sector has impacted Information of Agricultural System through the Government efforts very effectively in Farm sector (On-Farm and Off- Farm Input System, Production System, Output System) as well as Non- Farm Sector.

India's digital story is one of an ICT - drove advancement by utilization of innovation that is reasonable, comprehensive and transformative. The Digital India Program intends to change India into an information-based economy and digitally engaged society. The digital India Program is a lead program of the Government of India with a dream to change India into a digitally enabled rancher and information 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. KisanSuvidha, e-PusaKrishi, AgriApp, KrishiGyan, agropedia, e-krishi, e-chaopal etc. based on digital information for farmers have been started in India [2].

Digital extension 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 a minimum cost. These centres have also led to the empowerment of marginalized sections of the society by creating employment for over 12 lakhs urban and rural 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 [3]. At the centre of the idea of strengthening is power. The chance of strengthening relies upon two things. To start with, strengthening necessitates that force can change.

In the event that force can't change, on the off chance that it is inalienable in positions or individuals, at that point strengthening is beyond the realm of imagination, nor is strengthening possible in any important way. At the end of the day, on the off chance that force can change, at that point strengthening is conceivable. Second, the idea of strengthening relies on the possibility that force can extend. This subsequent point mirrors our basic encounters of intensity as opposed to how we consider power.

Strengthening is multi-dimensional, social, and procedure. It is multi-dimensional in that it happens inside sociological, mental, monetary, and different measurements. Strengthening additionally happens at different levels, for example, individual, gathering, and network. Strengthening, by definition, is a social procedure, since it happens in relationship to other people. Strengthening is a procedure that is like a way or excursion, one that creates as we work through it. Different parts of strengthening may fluctuate as indicated by the particular setting and individuals included, yet these stay consistent. What's more, one significant consequences of this meaning of strengthening is that the individual and network are essentially associated.

Strengthening is related with a greater number of designs than some other mode. By looking at 'design' with 'mode', we see that innovations most connected with intuitiveness in the previous talks – Websites, CD-ROMs, TV-are likewise most connected with Empowerment. There is likewise a correspondence among Empowerment and the designs on the expansion, for example, Games and General advanced applications. This pattern is increasingly articulated among the most incessant designs of 2014 where 72 percent of the General applications are related with Empowerment. The most continuous newcomers are additionally most every now and again coded as Empowerment-70 percent of Apps and 82 percent of Social media references. Be that as it may, other successive setups in 2014 like Games and Websites will in general be related with different methods of intelligence. In numerous nations today, pioneers see slacking (or no) development, listing business and rising underemployment. While they perceive that the Internet is certainly not an enchantment projectile, these pioneers accept that the Internet, and its related advanced innovations (items and administrations that encourage the creation, stockpiling, investigation and sharing of information and data), may be a potential monetary friend in need [4]. Digital technologies can likewise improve human government assistance. The World Bank found that "fast entrance of digital technologies is changing the lives of poor people." These technologies have enabled little ranchers to look and sell in more markets and to associate with government without voyaging significant distances, visiting different government workplaces or offering incentives [5]. Researchers have discovered that Internet use is decidedly associated with satisfaction [6]. A prospective investigation of 700,000 Israelis found that Internet use builds life fulfillment and it is particularly useful to poor people, incapacitated and old.

Material and Methods

The research design adopted for the study was ex-post facto, because a pre-existing characteristic was used. 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 and Krishi Vigyan Kendra. It comprises of nine blocks namely Rewa, Sirmour, Mauganj, Gangeo, Hanumana, Teonthar, Naigarhi, Jawa and Raipur Karchuliyan. 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. Ten farmers from each village were selected purposively. Thus, the sample was consisted of 120 respondents. 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. After total counting of frequencies, the percentages were calculated for each selected variable. These percentages for each variable, under which survey was conducted, showed in tabular forms, which consist of frequencies and percentage calculated for that variable for the farmers. After the percentage and frequency calculation, mean and standard deviation

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.

Findings

Demographic, communication and psychological characteristics of farmers Age

The number of years that the respondents had completed at the time of investigation was considered as his age. As per the recommendation of Govt. of India age group was divided into following categories:

Table-1 Distribution of respondents according to their age, n= 120

Serial No.	Age Categories	Frequency	Percentage
1	Young (Up to 35)	30	25
2	Middle Age (36 to 50)	55	45.84
3	Old Age (Above 50)	35	29.16
	Total	120	100

In [Table-1] the data revealed that out of the total 120 respondents, 25 percent were belong to young age group, 45.84 percent belong to middle age and 29.16 percent belong to old age group. Darshan *et al.* (2017) [7] observed that majority (80.00%) of the farmers' belonged to young age group (up to 35 years) but in this study found that middle age group. Thus, it may be concluded that maximum of respondents (45.84 %) belong to middle age group followed by 29.16 percent belong to old age and (25 %) young age group. The middle age growers have family responsibility and more involvement in the farming.

Gender

Cent percent respondents had male in the study area.

Level of Education

Education is an important indicator of socio-economic status that determines the knowledge and the rate of adoption of any technology. It has been observed that higher is the level of education, greater the knowledge and adoption of the technology. The respondents were classified into seven categories on the basis of their educational attainment.

Table-2 Distribution of respondents according to their level of Education, n= 200

SN	Category	Frequency	Percentage
1	Primary School	07	5.84
2	Middle School	08	6.66
3	High School	25	20.83
4	Higher Secondary	25	20.83
5	Graduate	48	40
6	Above Graduate	07	5.84
	Total	120	100

In the [Table-2] the result showed that the majority of the respondents (40 %) attained graduate, followed by High school (20.83%), higher secondary (20.83%), middle school education (6.66%), Primary level (5.84 %), and above Graduate (5.84%). Out of 120 respondents. It could be possible reason that the most of the growers have involved in farming because they are interest to adopt new technology through digital technology. Darshan *et al.* (2017) pertaining to the education indicated that, 40.00 percent, 37.50 percent and 22.50 percent of social media user-farmers had education level up to matriculate, intermediate and graduation and above respectively and Littlejohn *et al.* (2010) [8] found in similar study

Type of family

Table-3 Distribution of respondents according to their family type, n= 120

SN	Family type	Frequency	Percent
1	Nuclear	96	80
2	Joint	24	20

The data of the [Table-3] revealed that out of the total 120 respondents, 80 percent were belong to nuclear family, 20 percent belong to joint family.

Family Size

In the [Table-4] result showed that majority of the respondents (80.84%) having 4 to 6 members, while 17 percent respondents having more 2 to 3 members in the family. The greater number of members in the families might be due to dominance of joint family system in the area Darshan *et al.* (2017) revealed the similar finding in their study.

Table-4 Distribution of respondents according to their family size, n= 200

SN	Family Size	Frequency	Percent
1	2 to 3 members	17	14.16
2	4 to 6 members	97	80.84
3	7 to 9 members	5	4.16
4	Above 9 members	01	0.84
	Total	120	100

Size of Land holding

In the present study land holding of respondents were categorized under six categories i.e. land less, marginal, small, low medium high medium and large. In the [Table-5] result indicated that the majority of respondents had small landholding 45.83 percent followed by marginal landholding, 40 percent, low medium 10.83 percent, large landholding farmers 0.84 percent and landless 1.66 percent. Darshan *et al.* (2017) revealed the similar finding in their study.

Table-5 Distribution of respondents according to their land holding, n=120

SN	Land holding	Frequency	Percentage
1	Landless	02	1.66
2	Marginal (0.1-1.0 ha)	48	40
3	Small (1.1-2 ha)	55	45.83
4	Low medium (2.1-4.0 ha)	13	10.83
5	Medium (4.1-10 ha)	01	0.84
6	Large (Above 10 ha)	01	0.84
	TOTAL	120	100

Family income

In present study family income of respondents were categories under four categories i.e. family with <20000/- income per month, family with 20,000-30,000/- per month, family with 30,000-50,000/- per month and family with more than 50000/- per month. In the [Table-6] result indicated that majority of family had Rs. 30,000-50,000/- per month 58.33 percent followed by family had Rs. 20,000-30,000/- per month 20.84 percent, more than Rs. 50000/- per month 16.67 percent and only 4.16 percent family had less than Rs. 20,000/-per month, this shows that majority of respondents had good family income to the farming. Darshan *et al.* (2017) revealed the similar finding in their study.

Table-6 Distribution of respondents according to their family income, n=120

SN	Family income (Rs. per month)	Frequency	Percentage
1	<20000/-	05	4.16
2	20,000-30,000/-	25	20.84
3	30,000-50,000/-	70	58.33
4	More than 50000/-	20	16.67
	TOTAL	120	100

Social participation

In the present study Social participation of respondents were categorized under five categories i.e. member of one organization, member of more than one organization, office holder public leader e.g. MP, MLA etc. and family with no membership. [Table-7] indicates that majority of family had one membership in organization 90 percent and member of more than one organization 10 percent were members in the social organization.

Table-7 Distribution of respondents according to their Social participation, n=120

SN	Social participation	Frequency	Percentage
1	Member of one organization	108	90
2	Member of more than one organization	12	10
	TOTAL	120	100

Type of House

In the present study houses of respondents were categorized under four categories i.e. No own House, kachcha House, pakka house and mansion. [Table-8] indicates that majority of respondent had pakka house 66.67 percent and 33.33 percent had kachcha house in the study area.

Table-8 Distribution of respondents according to their house type, n=120

SN	House	Frequency	Percentage
1	Kachcha House	40	33.33
2	Pakka house	80	66.67
	TOTAL	120	100

Farm power

Farm power implement are those implement which are in the farm for production function such as Drought Animal, Electric motor, Chaff cutter, Tractor, Inverter, Generator, and Tube well/submersible Pump etc. it has mean 3.21 with standard deviation 1.60. [Table-9] indicates that majority of the respondents had medium 66.67 percent farm power materials. Respondent had low access to farm power material had 17.50 percent and 15.83 percent of respondent had high access to farm power material.

Table-9 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1.	Low (upto 1.60)	21	17.50
2.	Medium (1.61 to 4.81)	80	66.67
3.	High (Above 4.81)	19	15.83
	TOTAL	120	100

Material possession

Any tangible or intangible possession that was owned by someone. Such Sofa sett, Cooler, A/C, Mobile phone, Desk top, Electric fan, Induction cooker, Laptop, Cultivator, Motor cycle, Television etc. it has mean 5.20 with standard deviation 2.55. [Table-10] indicates that the majority of respondent had medium 62.50 percent material possession followed by high 19.16 percent and 18.34 percent had low material possession. This shows that maximum number of respondents had all necessary material which is required for healthy life.

Table-10 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1.	Low (Upto 2.65)	22	18.34
2.	Medium (2.66 to 7.75)	75	62.50
3.	High (Above 7.75)	23	19.16
	Total	120	100

Handling of Android

100 percent respondents had properly handled the android the mobiles. Waghmode *et al.* (2014) [9] revealed the similar finding in their study.

Information processing time

Information processing time is operationalized the respondents were spent the time using android mobile and computer for getting valuable information about modern technology of agriculture. We categorized spent time such as one hour, two hours, three hours, four hours, five hours and six hours in days. It has mean 2.00 with standard deviation 1.50. In the [Table-11] result showed that the majority of respondent had medium 66.67 percent Information processing time followed by low 29.17 percent and 04.16 percent had high Information processing time of the respondents. Waghmode *et al.* (2014) revealed the similar finding in their study.

Table-11 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1	Low (Upto 0.50)	35	29.17
2	Medium (0.51 to 3.50)	80	66.67
3	High (Above 3.50)	05	4.16
	Total	120	100

Information management Behavior

Information management Behavior is operationalized the respondents were saved the information related to farming. We categorized such as share with farmers, through memory based or remember, diary, mobile and computer. It has mean 6.90 with standard deviation 3.94.

In the [Table-12] result indicated that the majority of respondent had medium 71.67 percent Information management Behavior followed by low 24.17 percent and 04.16 percent had high Information management Behavior of the respondents. Waghmode *et al.* (2014) revealed the similar finding in their study.

Table-12 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1.	Low (Upto 2.96)	29	24.17
2.	Medium (2.97 to 10.84)	86	71.67
3.	High (Above 10.84)	05	04.16
Total		120	100

Decision making

It has mean 6.73 with standard deviation 3.78. [Table-13] indicates that the majority of respondent had medium 81.67 percent Decision making abilities followed by low 13.33 percent and 05.00 percent had high decision-making abilities of the respondents.

Table-13 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1	Low (Upto 2.95)	16	13.33
2	Medium (2.96 to 10.51)	98	81.67
3	High (Above 10.51)	06	05.00
Total		120	100

Level of aspiration

The degree or quality of performance (exhibited in a testing situation) that a person desires to attain or feels he or she can achieve. Here 13 statements were made. Five-point Likert method scale was used. It has mean 50.70 with standard deviation 5.17. [Table-14] indicates that (77.50%) had medium level of aspiration followed by 12.50 percent low and 10.00 percent had high level of aspiration. This leads to understanding that level of aspiration for healthy life was good and 10 percent had high aspiration for life but 12.50 percent had low aspiration than majority of them.

Table-14 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	frequency	percentage
1	Low (upto 45.53)	15	12.50
2	Medium (45.54 to 55.87)	93	77.50
3	High (Above 55.87)	12	10
Total		120	100

Achievement motivation

Achievement motivation can be defined as the need for success or the attainment of excellence. Individuals will satisfy their needs through different means, and are driven to succeed for varying reasons both internal and external. Here 11 statements were made. Five-point Likert method scale was used. It has mean 44.29 with standard deviation 6.07. [Table-15] indicates that 76.66 percent respondent had medium achievement motivation this leads to understanding that they had motivated about their work and use of technology in future. 15.84 percent had high motivation to achieve the goal but 7.50 percent had low achievement motivation about technology use and their work.

Table-15 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1	Low (Upto 38.22)	09	7.50
2	Medium (38.23 to 50.36)	92	76.66
3	High (Above 50.36)	19	15.84
Total		120	100

Communication behaviour

The act or process of using words, sounds, signs, or behaviours to express or exchange information or to express your ideas, thoughts, feelings, etc., to someone else. A message that is given to someone: a letter, telephone call, etc. Here 12 statements were made. Five-point Likert method scale was used. It has mean 42.15 with standard deviation 5.96.

Table-16 On the basis of mean $\pm$ S.D. it was categorized into three categories

SN	Category	Frequency	Percentage
1	Low (Upto 36.19)	20	16.67
2	Medium (36.20 to 48.11)	89	74.17
3	High (Above 48.11)	11	09.16
Total		120	100

[Table-16] indicates that 74.17 percent respondent had medium communication behavior, while 09.16 percent had high communication behaviour this leads to

understanding that they use gadgets or technology to connect with others they were active in using applications and social networking sites but 16.67 percent had low communication behaviour this showed that they were less active in social site and using technology [9-14].

Conclusion

Digital Extension refer to technologies that provide access to agricultural information and knowledge through digital tools. Digital extension in agriculture is increasingly important. E-Agriculture is an emerging field focusing on the enhancement of agricultural production and rural empowerment through improved information and communication processes. The most widely used and available tools of farmers' advisory services are- telephone based TeleAdvisory Services, the mobile based Agri Advisory services, television and web based online Agri Advisory services, video-conferencing, Online Agri video. At present young and middle age farmers more attract to use and adopt new digital technologies and literate farmers more familiar with latest digital tools but we can provide the all agricultural knowledge to all categories of farmers in India. By adopting new digital tools farmers easily get the knowledge and improved their farming skills and increased the agricultural production and allied sectors.

Application of research: The present research has wide application in identifying status of farmers who effectively and regular use the digital tools and it helps to interventions of ICTs tools in agricultural production and increased the doubling farmer's income.

Research Category: Ex-post Facto and descriptive research Design

Abbreviations: JNKVV- Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, 482004, Madhya Pradesh, India, IAS- Institute of Agricultural Sciences, BHU- Banaras Hindu University, F-Frequency, P- Percentage

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Study area / Sample Collection: Two blocks in Rewa district, Madhya Pradesh

Cultivar / Variety / Breed name: Nil

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References

- [1] Moni M. (2019) YOJNA, 63, 45-49.
- [2] Digital India (2018) *Digital India initiatives*. Accessed on April 15, 2018.
- [3] Prasad R.S. (2019) YOJNA, 63, 7-11.
- [4] Chakravorti B., Tunnard C. and Chaturvedi R.S. (2015) "Where the Digital Economy Is Moving the Fastest." *Harvard Business Review*.
- [5] World Bank (2016) *World Development Report 2016: Digital Dividends*. Washington

- [6] Thierry P., Poussing N. and Suire R. (2013) *Journal of Socio-Economics*, 46, 105-16.
- [7] Darshan N.P., Meena B.S. and Meena H.R. (2017) *Int. J. Curr. Microbiol. App. Sci.*, 6(10), 14-18.
- [8] Littlejohn A., Margaryan A. and Vojt G. (2010) *Electronic Journal of e-learning*, 8(1), 13-20.
- [9] Waghmode Y.J., Desai A.N. and Sawant P.A. (2014) *Agriculture Update*, 9(4), 543-546.
- [10] GFRAS (2012) *Fact Sheet on Extension Services. Position Paper. Global Forum for Rural Advisory Services (GFRAS) June 2012.*
- [11] Goyal A. (2011) *ICT in Agriculture Sourcebook: Connecting Smallholders to Knowledge, Networks, and Institutions*, World Bank, Washington D.C.
- [12] Karthikeyan C. (2012) *International J. of Exten.*, 50(8), 24-30.
- [13] NSSO (2014) *Key Indicators of Situation of Agricultural Households in India*, NSS 70th.
- [14] Karthikeyan S. and Mohanraj (2013) *International J. of Exten.*, 9, 24-31.