



# Exploring the Constrained Faced by Farmer in Use of ICT Mediated Extension Services in Arghakhanchi District of Nepal

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## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

A study was conducted to find out the profile characteristics of the respondents and constraints faced by farmers in usages of ICTs mediated extension services by the farmers of Arghakhanchi district of Nepal in 2020. A total of 180 farmers were randomly selected for the study from 6 wards of 2 municipality of the district. Data was collected by structured interview schedule and used different statistical analysis tools for interpreting the data such as Frequency, Percentage, Arithmetic Mean, Standard Deviation and Rank order. The constraints perceived by farmers were divided on 4 sections i.e., Infrastructural constraints, financial constraints, Content related constraints, and Personal constraints. Majority of respondent possessed the lack of network connectivity is first problem among infrastructural

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constraints, high cost of internet facilities in village on financial constraints, Similarly Complexity of message content on content related constraints and lack of specialized training on ICT on Personal constraints.

*Keywords: ICT; agriculture; farmer; profile characteristics; constraints.*

## 1. INTRODUCTION

ICT is broad term that consist of communication technology, computer technology and information management technology which can revolutionize Nepalese agriculture sector and can benefit all farmers including small landholders. Agriculture is the most important sectors that contributes 24.1 % of total GDP and about 60.4% of the total population of Nepal are depending on it (Agriculture statistics 2022-2023). The conventional approach of agriculture being adapted has lots of challenges in terms of production, marketing, profit etc. In Nepal extension service coverage is significantly less, which is only 15% so minimize this coverage many different agency provides various type of ICT mediated extension services in agriculture. The challenges of the traditional agriculture canbe addressed significantly by using Information and Communication Technologies (ICT) which could be play an important role in uplifting the livelihoods of the small landholder farmers. This article explores the various profile characteristics of the respondents in research area and identify the constraints faced by the respondent on use of ICT mediated extension services for agriculture purpose.

**Some of the important ICT mediated extension services in Nepalese agriculture are as follows:**

### 1. Telecommunication initiatives:

- a. Kisan call center:

### 2. Media initiatives:

#### A. Mass media

- a. Krishi program on Radio Nepal:
- b. Krishi program on National television:
- c. Krishi T.V.:

#### B. Print media:

- a. Krishi magazine:
- b. Krishi diary
- c. Krishi Patrika:

### 3. Internet-based initiatives:

- a. Smart Krishi:
- b. Hamro Krishi:
- c. Krishi guru:

## 2. REVIEW OF LITERATURE

Chauhan et al. [1] found that the majority of the respondent who used I.C.T. in agriculture had a medium level of social participation, a medium level of information-seeking behavior, and a medium level of mass media exposure.

Gaur [2] found that most of the I.C.T. users in the research area (40%) belong to the middle age group, followed by the old (32.5%) and young age group (27.5). She also observed that 40% of the I.C.T. user farmers had primary and middle-level education, followed by 30% higher education and 30% illiterate group.

Gautam [3] revealed that the majority of farmers (34.7%) had secondary school level education (class 6 to 10) followed by 25 % of farmers with primary level education, 24% of respondents had Post-Secondary Education (Above 11), 13.3 % farmers possessed adult literacy education and 3.1% had no formal education in the study area.

Sahar (2019) stated that poor internet connectivity (76.67%), lack of location-based information (94.57%), and repairing cost of I.C.T. tools (60.84%) were the major problems faced by the respondents. Lack of trustworthy information (35.8%), required content was not available in a local language, and lack of adequate skills were other constraints faced by the respondent.

Mishra et al. [4] conducted research and they revealed that lack of knowledge about ICT tools, relevant information not received in time, and awareness of new ICT services among farmers were the major constraints in the use of ICT in agriculture.

Chowhan and Ghosh [5] found that the majority of the farming group and thereby involved extension workers have limited access, usage, knowledge, and capacity for the use of ICT tools and media.

Kumar et al. [6] revealed that the maximum number of respondents are educated up to the 12th standard, have land holdings of less than 5 acres, and indulging in the practices of agriculture for more than fifteen years.

Singh et al. [7] conducted a study and shows that Among the personal constraints, the high cost of ICTs tools, and lack of awareness about the availability of different ICT tools were major constraints. Similarly, in the case of infrastructural constraints Internet Connectivity, and in the case of organizational constraints subscription to relevant Journals and e-resources and lack of training on ICT tools ranked at the top.

Nirmalkar et al. [8] stated that most of the I.C.T. users in the research area belonged to the middle age group and had medium-level knowledge of ICTs in agriculture.

Rengaraj and Shibu [9] found that factors such as lack of awareness, not enough ICT infrastructure, and non-strategic location of information centers were the major constraints.

Mahajan et al. [10] - stated that Lack of awareness of proper functioning about ICT tools, Lack of training of the farmers on ICT tools, Inadequate internet supply, Lack of uninterrupted power supply, Difficulty in understanding the content language, Poor mobile/internet connectivity in rural areas were the major constraints faced by Farmers.

## 2. MATERIALS AND METHODS

The present study is conducted in Sandhikharka municipality and Malarani rural municipality of Arghakhanchi district of Nepal. Districts and municipalities were purposively selected for the study. There are 12 wards in Sandhikharka municipality and six wards in Malarani rural municipality. Out of 12 wards of the Sandhikharka municipality, wards No. 2, 6, and 11 were selected randomly. Whereas from 6 wards of Malarani rural municipality, wards No. 3, 4, and 5 were randomly selected. From each selected ward, 30 farmers were selected randomly for the present study. Hence the total number of respondents was 180. The data were collected by using the structured interview schedule and collected data was analyzed, classified, and tabulated. Statistical tools such as frequency, percentage, mean and standard deviation were used to interpret findings and draw conclusions [11-14].

## 3. RESULTS AND DISCUSSION

**Table 1. Profile characteristics of respondents in the research area**

### a. Age

Age	Range	Frequency	Percentage
Young	<35 years	60	33.00
Middle	35-58	90	50.00
old	>58 years	30	17.00

The data revealed that half of the total respondents (50%) belonged to the middle age group followed by young age i.e., 33.33 % and 16.66 percent of the farmers were in the old age group. Similar results were reported by Nirmalkar et al. [8].

### b. Gender

Gender	Frequency	Percentage
Male	75	41.67
Female	105	58.33

Most of the respondent (58.33 %) in the research area were female, and 41.67 percent respondent was male. These findings were similar to findings of Gautam [3].

### c. Family type

Family type	Frequency	Percentage
Joint	98	54.50
Nuclear	82	45.50

More than half of the (54.5 %) belonged to the joint family and 45.55 per cent respondent belonged to the nuclear family.

### d. Education

Education level	Frequency	Percentage
Illiterate	11	06.11
Can read only	14	07.77
Can read and write	8	04.44
Primary school (1-5 class)	41	22.30
Medium school (5-8)	16	08.88
High school (9-12)	57	31.86
Graduated	28	15.85
Post graduated	5	02.79

Majority of the respondent (31.67%) were having High school level education whereas, 22.77 per cent farmers were having Primary school, 15.55 per cent respondents were Graduated, 8.88 per cent respondents having medium school level

education, 7.77 per cent farmers Could read-only, 6.11 per cent respondents were Illiterate, 4.44 per cent respondents can read and write, and only 2.77 per cent respondents had post-graduate level educations. These findings are in conformity with the findings of the Kumar et al. [6].

**c. Occupation**

Occupation	Frequency	Percentage
Agriculture	7	04.00
Agriculture +Livestock	130	72.00
Agriculture + Services	8	04.44
Agriculture + Business	5	02.56
Agriculture +Others	30	17.00

Most of the respondents (73.33%) were engaged in agriculture + livestock, 4.44 percent of farmers were involved in agriculture + services along with their family members and 3.88 percent farmers were engaged in only agriculture while 2.77 percent farmers were involved in agriculture + business.

**d. Farm experience**

Farm experiences	Range	Frequency	Percentage
Low (mean-S.D)	<7 year	36	20.00
Medium (mean ± S.D)	7-36 year	104	57.78
High (mean +S.D)	>36 year	40	22.22

Majority of the respondent had a 7-36 years of farm experiences followed by 36 years and less than 7 years of farm experiences. Similar results were reported by the Kumar et al. [6].

**e. Annual family income**

Annual family income	Range	Frequency	Percentage
Low (Mean – S.D)	<149612.41	35	19.34
Medium (Mean ± S.D)	149612.41-495054.24)	97	54.55
High (Mean – S.D)	>495054.24	47	26.11

More than half of the farmers had earned a medium level (149612.41-495054.24) of annual family income, while 26.11 percent of farmers fell

under a high level (>495054.24) of annual family income and 19.34 percent of farmers fell under low- family income (<149612.41) group. These findings are in line with the findings of Kumar et al. [6].

**f. Extension agency contact**

Extension contacts:	Range	Frequency	Percentage
Low( Mean – S.D)	<0.355	50	27.77
Medium (Mean ± S.D )	0.355- 10.28	97	53.88
High (Mean + S.D)	>10.28	33	18.33

More than half (53.88%) of the respondents had a medium level of extension contact followed by low (27.77%) and high (18.33%) respectively. These findings confirm the findings of Kumar (2018).

**g. Mass media exposure**

Mass media exposure	Range	Frequency	Percentage
Low<(Mean – S.D)	<2	44	24.44
Medium (Mean ± S.D)	2-5	117	65.00
High > (Mean + S.D)	>5	19	10.55

Majority of the respondent (65%) had a medium level of mass media exposure followed by low (24.44%) and high (10.55%) mass media exposure respectively.

**h. Social participation**

Social participation	Range	Frequency	Percentage
Low < (Mean – S.D)	<0.097	75	41.68
Medium (Mean ± S.D)	0.097- 5	77	42.77
High > (Mean + S.D)	>5	28	15.55

Majority of the respondent (42.77%) had a medium level of social participation followed by low (41.68%) and high (15.55%) level of social participation. Similar results were reported by the Chauhan et al. [1].

### I. Information seeking behavior

Information seeking behavior	Range	Frequency	Percentage
Low (Mean- S.D)	<2.81	40	22.22
Medium (Mean ± S.D)	2.81-8.98	114	63.33
High (Mean +S.D)	>8.98	26	14.45

Out of the total farmers, 63.33 per cent of farmers had medium information-seeking behavior, 22.22 per cent farmers had low information-seeking behavior, and 14.45 per cent of farmers had high information-seeking behaviors. These findings are in conformity with the findings of the Chauhan et al. [1].

### J. Land ownership

Landholding	Range	Frequency	Percentage
Small (Mean –S.D)	<0.243 acre	22	12.22
Medium (Mean ± S.D)	0.244 – 1.77 acre	130	72.22
Large (Mean + S.D)	>1.77 acre	28	15.56

Majority (72.22%) of farmers had medium-size farm holding followed by high (15.56%) and low (12.22%) size farm holdings. These findings are in conformity with the findings of the Kumar et al. [6].

### k. Media ownership

Media ownership	Range	Frequency	Percentage
Low( Mean – S.D)	<4.291	17	09.44
Medium (Mean ± S.D)	4.291-6.48	140	77.77
High (Mean + S.D)	>6.48	23	12.79

More than two-thirds (77.77%) of the farmers had a medium level of media ownership. followed by 12.79 per cent of farmers had a high level of media ownership and 9.44 per cent of farmers had a low level of media ownership. Similar findings gained support from the study of the Chauhan et al. [1].

**Table 2. Constraints perceived by the farmer towards the use of ICT Based extension services in agriculture**

A. Infrastructural constraints	Frequency	Percentage	Mean	Rank order
1. Irregular supply of power or electricity	6	03.00	0.66	IV
2. Lack of network connectivity	156	86.67	1.73	I
3. Lack of accessibility of ICT tools	10	05.22	0.12	V
4. Lack of awareness of ICT initiatives	133	74.00	0.899	III
5. Lack of awareness of ICT tools	71	39.34	1.61	II
B. Financial constraints				
1. High cost of internet facility in village	127	70.59	0.483	I
2. High cost of ICT tools	7	03.88	1.455	II
C. Content related constraints				
1. Complexity of message content	8	04.44	0.522	I
2. Lack of reliable and useful content	6	03.34	0.47	II
3. Lack of updating of information	6	03.34	0.44	III
D Personal constraints				
1. Lack of education	120	66.67	1.40	III
2. Lack of skills in handling in ICT tools	153	85.00	1.71	II
3. Lack of specialized training on ICT	170	94.46	1.944	I

The data presented on Table 2 revealed that among five constraints in infrastructure constraints, lack of network connectivity with mean 1.73 was on first ranked followed by lack of awareness of ICT initiatives (1.61), lack of awareness of ICT tools (0.899), Irregular supply of power or electricity (0.66) and lack of accessibility of ICT tools (0.12) with rank II, III, IV, V respectively.

Similarly, the high cost of internet facilities in villages with mean 1.455 was on I ranked and high cost of ICT tools constraints was ranked II with 0.483 mean in financial constraints.

It was observed from the table that among three content related constraints, the complexity of message content with mean 0.522 was on the first rank whereas, lack of reliable and useful content with mean 0.47 was on the second rank, and lack of updating of information with mean 0.44 was rank on the third.

And lack of specialized training on ICT with mean 1.944 was ranked on first whereas lack of skill in the handling of ICT tools with mean 1.71 was on the second rank and lack of education with mean 1.40 was ranked on the third Personal constraints [15-17].

These findings are in conformity with the findings of the Kumari (2019), Singh et al. [7], Mishra et al. [4] and Rengaraj and Shibu [9].

#### 4. CONCLUSION

The study concluded that the major constraints faced by the farmer in the research area are Lack of awareness of ICT initiatives, lack of specified training on ICTs, low literacy rate, lack of skills on the handling of ICTs tools, distrust the information obtains from the ICTs tools, technophobia among the farmers and low advertisement of ICT initiatives are the main reason for low usages of ICT in agriculture. To overcome these problem government of Nepal should advertise, should conduct various training and workshop at farmers level about ICT, should made available of Internet facility at low cost, information should be provided in local language and, increase the extension agency contact of the farmers.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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