IMPACT OF FARMER'S EDUCATION ON USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES ACROSS AGRICULTURAL SUPPLY CHAIN

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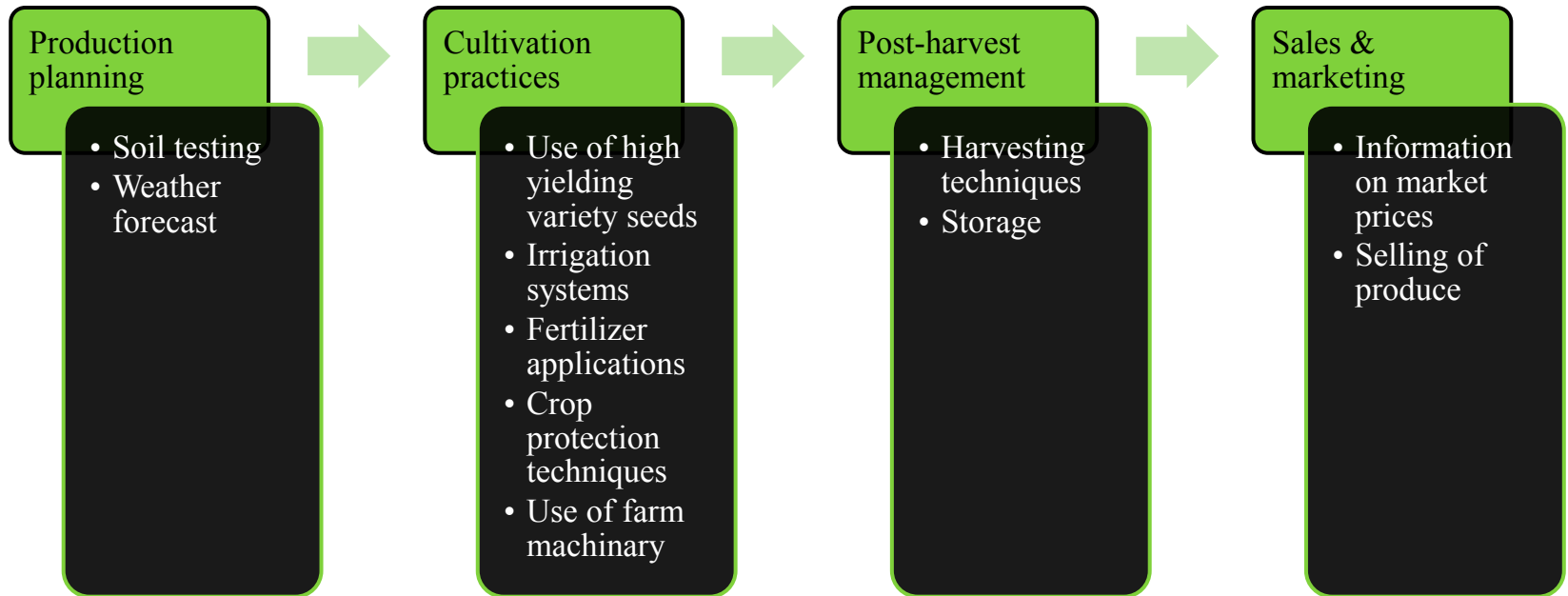
Introduction

- Information use in agriculture has increasingly become important for effective decision-making by the farming community

- ICT initiatives took place in several forms, which can be categorized as informational, transactional and e-governance.

- The study aims at understanding the implication of education level of farmers on the use of ICT based information system.

Data and Methods

- This study is based on the primary survey of 461 farmers belonging to eight districts of Uttar Pradesh in India

- A questionnaire survey was conducted personally and farmers' responses to various questions were obtained and recorded.

- A total of 30 villages were surveyed - for better representation of ICT based information services delivery, 15 villages were selected having *e-Choupals*, established by the private and public agencies.

- To assess the difference in adoption behaviour of ICT based information services among educational categories of the farmers; chi-square statistics has been used.

Use of ICTs across the supply chain

Production planning
- Soil testing
- Weather forecast

Cultivation practices
- Use of high yielding variety seeds
- Irrigation systems
- Fertilizer applications
- Crop protection techniques
- Use of farm machinary

Post-harvest management
- Harvesting techniques
- Storage

Sales & marketing
- Information on market prices
- Selling of produce

Sample demographic characteristics

Socio-demographic variables	ICT Users (N=281)		Non ICT Users (N=180)		χ^2
	N	**%**	**N**	**%**	
Age (years)					1.724
<25	19	6.8	9	5.0	P=0.632
25-40	121	43.1	86	47.8	Df=3
40-60	104	37.0	66	36.7	
>60	37	13.2	19	10.6	
Education					31.797***
Illiterate	18	6.4	35	19.4	P=0.000
Below Junior High School	92	32.7	78	43.3	Df=3
High School/Intermediate	123	43.8	51	28.3	
Graduate/Post Graduate	48	17.1	16	8.9	
Social category					32.924***
General	152	54.1	53	29.4	P=0.000
Other Backward Class (OBC)	114	40.6	98	54.4	Df=2
Schedule Caste (SC)	15	5.3	29	16.1	
Monthly Income (Rs.)					41.820***
<2000	78	27.8	100	55.6	P=0.000
2000-3000	81	28.8	44	24.4	Df=4
3001-4000	48	17.1	17	9.4	
4001-5000	24	8.5	9	5.0	
>5000	50	17.8	10	5.6	
Landholdings					19.524***
Marginal (<1 ha)	50	17.8	61	33.9	P=0.000
Small (1-2 ha)	96	34.2	63	35.0	Df=3
Medium (2-4 ha)	93	33.1	40	22.2	
Large (>4 ha)	42	14.9	16	8.9	
Total	281	100.0	180	100.0	

***significant at the 0.01 level, **significant at the 0.05 level, *significant at the 0.10 level
N=number of observations

Chi-square statistics on use of ICT based information on production planning by education level

Production planning	Below Primary		Primary to Junior High School		Secondary and Higher Secondary		Graduate & Above		Pearson Chi-Square
	N	%	N	%	N	%	N	%	
Soil Testing									
ICT Users	5	5.4	12	9.2	41	23.6	14	21.9	21.620***
Non ICT Users	87	94.6	119	90.8	133	76.4	50	78.1	Df=3, p=0.000
Weather Forecast									
ICT Users	10	10.9	47	35.9	81	46.6	31	48.4	37.543***
Non ICT Users	82	89.1	84	64.1	93	53.4	33	51.6	Df=3, p=0.000

***significant at the 0.01 level, **significant at the 0.05 level, *significant at the 0.10 level

Chi-square statistics on use of ICT based information on cultivation practices by education level

Cultivation practices	Below Primary		Primary to Junior High School		Secondary and Higher Secondary		Graduate & Above		Pearson Chi-Square
	N	%	N	%	N	%	N	%	
Use of HYV									
ICT Users	19	20.7	51	38.9	90	51.7	35	54.7	28.629***
Non ICT Users	73	79.3	80	61.1	84	48.3	29	45.3	Df=3, p=0.000
Irrigation Systems									
ICT Users	0	0.0	1	0.8	5	2.9	0	0.0	5.700
Non ICT Users	92	100.0	130	99.2	169	97.1	64	100.0	Df=3, p=0.127
Fertilizer applications									
ICT Users	14	15.2	44	33.6	79	45.4	30	46.9	27.454***
Non ICT Users	78	84.8	87	66.4	95	54.6	34	53.1	Df=3, p=0.000
Crop Protection Techniques									
ICT Users	21	22.8	48	36.6	83	47.7	34	53.1	20.733***
Non ICT Users	71	77.2	83	63.4	91	52.3	30	46.9	Df=3, p=0.000
Use of Farm Machinery									
ICT Users	11	12.0	37	28.2	57	32.8	25	39.1	17.504***
Non ICT Users	81	88.0	94	71.8	117	67.2	39	60.9	Df=3, p=0.001

***significant at the 0.01 level, **significant at the 0.05 level, *significant at the 0.10 level

Chi-square statistics on use of ICT based information on post-harvest management by education level

Post-harvest management	Below Primary		Primary to Junior High School		Secondary and Higher Secondary		Graduate & Above		Pearson Chi-Square
	N	%	N	%	N	%	N	%	
Post Harvest Techniques									
ICT Users	11	12.0	35	26.7	70	40.2	26	40.6	26.508***
Non ICT Users	81	88.0	96	73.3	104	59.8	38	59.4	Df=3, p=0.000
Storage									
ICT Users	15	16.3	43	32.8	80	46.0	33	51.6	29.690***
Non ICT Users	77	83.7	88	67.2	94	54.0	31	48.4	Df=3, p=0.000

***significant at the 0.01 level, **significant at the 0.05 level, *significant at the 0.10 level

Chi-square statistics on use of ICT based information on sales & marketing by education level

Sales & marketing	Below Primary		Primary to Junior High School		Secondary and Higher Secondary		Graduate & Above		Pearson Chi-Square
	N	%	N	%	N	%	N	%	
Information on Market Prices									
ICT Users	27	29.3	61	46.6	107	61.5	43	67.2	32.618***
Non ICT Users	65	70.7	70	53.4	67	38.5	21	32.8	Df=3, p=0.000
Selling of produce									
ICT Users	22	23.9	55	42.0	99	56.9	37	57.8	30.803***
Non ICT Users	70	76.1	76	58.0	75	43.1	27	42.2	Df=3, p=0.000

***significant at the 0.01 level, **significant at the 0.05 level, *significant at the 0.10 level

Conclusions and Implications

- Availability of information and knowledge makes a significant impact on the quality of decision making across the agriculture supply chain

- Farmers with secondary and above education level adopt ICT based information system for decision making related to production planning, cultivation practices, post-harvest management and marketing and selling of their produce.

- The study provides a practical insight on designing an effective information delivery strategy for targeting potential users of ICT based agricultural information services.

- It also provides guidance to public extension system for designing ICT based information system to better serve the farming communities.

Thank You