

RESEARCHERS', EXTENSIONIST AND FARMERS LINKAGES IN RAJASTHAN

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ABSTRACT

Agricultural Knowledge and Information System (AKIS) must operate with synergy, having two way flow between research, extension and clientele systems. Researchers used different methods/media or channels of communication for transfer of technology to extension personnel and farmers. The present study was conducted in two agro-climatic zones of Rajasthan. A sample of forty researchers was drawn on the basis of probability proportional to the total number of researchers working in the selected agro-climatic zones. Majority of researchers possessed Ph.D. degree in agriculture, having more than 10 years job experience, rural family background, farming as parental occupation, attended more than two training courses, had low to medium level of job satisfaction, communication facilities and job commitment. The study indicated that majority of researchers used ZREAC meeting, research reports, personal contacts, trainings, professional meetings and monthly meetings for transfer of technology to extension personnel while demonstrations, trainings, kisan mela, personal visit and publications for transfer of technology to farmers. The variables like job satisfaction and job commitment had significant influence on the communication linkage mechanism. Poor infrastructure facilities, lack of policy support and poor economy, literacy, risk bearing and customary nature of farmers were major problems of researchers with both the systems. They suggested for joint planning, policy support by government, infrastructural support to improve the existing inter system linkage mechanisms.

Key words: AKIS (Agricultural Knowledge and Information System); Communication linkage mechanisms; Inter sub system; Farm technology

INTRODUCTION

Agriculture is central to all strategies and planning for social-economic development of the country. A rapid growth in agricultural sector is essential not only to achieve self-reliance at national level but also to household food security and most importantly, to bring about equity in distribution of income and wealth. This would result in rapid reduction in poverty levels. Since independence, the productivity and production has gone up. But extent to which agriculture has helped in equal distribution of income and wealth is debatable (Sujit and Mishra, 2002). India has well-developed research system in all the 127 agro-climatic zones of the country under ICAR and SAUs with a manpower of over, 30,000 scientists (Tyagi, 2000).

Presently, there is no dearth of farm technology but what worries is the transfer of technology from its point of generation to the doors of ultimate users. However, farmers are not keeping pace with constantly fast changing technologies. So there exists a communication gap between technology generation and technology utilization. As per reports of ICAR, New Delhi and various researches, 80 per cent of technologies generated are either not transferred to the ultimate users or they do not find applicability in farmers' field. Out of the remaining 20 per cent of technologies, around 50 per cent do not impress the farmers due to ineffective technology transfer, which ranges from language to effective demonstration of using the available tools. To achieve a high level of production, it is not enough to develop need based, scientifically sound, economically viable, culturally compatible and practically

feasible farm technologies, but it is also necessary to effectively transfer agricultural innovations from research system to ultimate users. The study was designed with following specific objectives:

1. To find out a brief account of profile of researchers
2. Communication linkages used by researchers for transfer of technology to extension personnel and farmers
3. Association of researchers' independent variables with communication linkages used for transfer of farm technology to extension personnel and farmers
- (4) Personal and institutional problems of researchers with extension as well as client system
- (5) Suggestion of researchers to improve the existing linkage mechanism

METHODOLOGY

The study was conducted in agro-climatic zone IIa and IIIa of Rajasthan. A sample of forty researcher respondents was drawn on the basis of probability proportional to the total number of researchers working at Agriculture Research Station (A.R.S.), Durgapura (Jaipur), A.R.S. Fatehpur Shekhawati (Sikar) and S.K.N.College of Agriculture, Jobner (Jaipur).

The empirical hypotheses related to researcher's-extension personnel and researcher's-farmers communication linkages were also tested. For this purpose, coefficient of correlation and multiple regression analysis technique was used. Further, to measure researchers' personal and institutional problems with extension as well as client system, a separate dichotomous structured schedule was developed.

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Then, frequencies and percentage of the responses falling in 'Yes' class were worked out. Likewise, suggestions of researchers to improve the existing communication linkage mechanism were taken through a separate schedule comprising open-ended query. The contents were then translated into specific suggestions and reported.

RESULTS AND DISCUSSION

Profile of Researchers: It is also presumed that their level of interaction could be determined to a considerable extent by socio-psychological background. The respondents were categorized into different groups on the basis of their personal characteristics and are presented in Table 1.

Table 1. Profile of researchers (N = 40)

S.No.	Variables	Levels	f	%
1.	Education	M.Sc. (Ag.)	1	2.50
		Ph.D. (Ag.)	39	97.50
2.	a) Teaching	No experience	18	45.00
		1-5 years	14	35.00
		6-10 years	5	12.50
		>10 years	3	7.50
	b) Research	No experience	0	0.00
		1-5 years	3	7.50
		6-10 years	6	15.00
		>10 years	31	77.50
	c) Extension	No experience	22	55.00
		1-5 years	11	27.50
		6-10 years	1	2.50
		>10 years	6	15.00
	d) Any other	No experience	26	65.00
		Master Trainers	7	17.50
Academic activity		1	2.50	
Computer (ARIC)		1	2.50	
Administrative		4	10.00	
N.C.C.		1	2.50	
3. Family background	Rural	21	52.50	
	Urban	16	40.00	
	Ru-urban	3	7.50	
4. Parental Occupation	Farming	20	50.00	
	Service	16	40.00	
	Business	2	5.00	
	Service+Farming	2	5.00	
5. Training attended	Nil	4	10.00	
	One	5	12.50	
	Two	7	17.50	
	Three	9	22.50	
	>Three	15	37.50	
6. Job satisfaction	Low (46-55)	9	22.50	
	Medium (56-70)	24	60.00	
	High (71-78)	7	17.50	
7. Communication facilities	Low (28-26)	10	25.00	
	Medium (27-41)	24	60.00	
	High (42-47)	6	15.00	
8. Job commitment	Less (5-13)	6	15.00	
	Moderate (14-20)	28	70.00	
	High (21-24)	6	15.00	

It can be narrated in brief that majority of researcher respondents possessed Ph.D. (Ag.) degree, more than 10 years job experience as researcher, rural family background, farming as parental occupation, attended more than two trainings, low to medium level of communication facilities, job satisfaction and also low to moderate level of job commitment

Researchers' communication linkages for the transfer of technology to extension personnel: After generation of the farm technology by the researchers, certain methods/media or channels of communication to extension personnel for further dissemination communicate it by them to ultimate users - farmers. The data regarding differential use of methods/media or channels of communication in Table 2 show that ZREAC meeting, research reports, personal contacts, trainings, professional meetings, monthly meetings were mostly used methods or channels for transfer of technology to the extension personnel. The least used methods/ channels were district coordination committee, personal letters, campaigns, TV talks and telephone calls for the transfer of research results to the extension personnel. These findings indicate that the researchers were using those methods or channels of communication that were obligatory on them to provide scientific information. These findings get strength from the findings of Ambastha and Singh (1976), Daivadeenam and Satyanarayana (1991), Veeraswamy, et al. (1992), Keshava and Birendra Kumar (1995), Kaushik (2002) and Gajbhiye (2003).

Table 2. Differential use of methods/media or channels of communication by researchers for transfer of technology to extension personnel

S. No.	Methods/Media or Channels	Total choice score	Rank order
1	Personal contacts	54	III
2	Personal visits	44	VIII
3	Office letters	43	IX
4	Office calls	41	XI
5	Telephone calls	34	XV
6	Trainings	53	IV
7	Workshops	50	VI
8	Seminars	42	X
9	Conferences	38	XII
10	Campaigns	20	XVII
11	Professional meetings	51	V
12	ZREAC meeting	68	I
13	Monthly workshops	50	VI
14	Diagnostic team visits	38	XII
15	District coordination committee	13	XIX
16	Group discussions	41	XI
17	Kisan mela	45	VII
18	Demonstration on farm	50	VI
19	Exhibition	41	XI
20	Publications		
	(i) News letters	38	XII
	(ii) Magazines	37	XIII
	(iii) Folders/handouts	35	XIV
21	Personal letters	14	XVIII
22	Radio talks	37	XIII
23	Telecast/TV talks	26	XVI
24	Research reports	57	II

Researchers' communication linkages for the transfer of technology to farmer: Research system itself also communicates with client system for the transfer of farm technology by certain methods / media or channels of communication. The data in Table 3 reveal that researchers used mostly demonstrations, trainings, kisan mela, personal visits / farm and home visits and publications / popular articles for the transfer of technology to farmers. While film shows, personal letters, advisory letters, they least used T.V. talks professional meetings and Rabi & Kharif campaigns for the transfer of farm technology to farmers. The total choice scores of differential use of methods / media or channels used by researchers for transfer of technology to farmers explain poor communication linkage. The researchers' availed very less opportunity directly to interact with the farmers. These findings are further in agreement with the past researches of Ambastha and Singh (1976), Ganorkar and Khonde (1979), Channegowda (1983), Daivadenam and Satyanarayana (1991), Veeraswamy et al. (1992), Nawab and Lawrence (1994) and Kaushik (2002).

Table 3: Differential use of methods / media or channels used by Researchers for transfer of farm technology to farmers

S. No.	Methods/Media or Channels	Total choice score	Rank order
1	Personal visits/farm & Home visits	45	IV
2	Training of farmers	51	II
3	Demonstrations	54	I
4	Publications/popular articles	44	V
5	Radio talks/farm broadcast	40	VII
6	TV talks / telecast	27	X
7	Advisory letters	22	XI
8	Personal letters	15	XII
9	Field days	42	VI
10	Film shows	14	XIII
11	Kisan mela	49	III
12	Office calls	40	VII
13	Telephone calls	32	VIII
14	Rabi & Kharif campaigns	31	IX
15	Professional meetings	44	V

Association of researchers' independent variables with communication linkages used for transfer of farm technology to extension personnel: The data in Table 4 revealed that out of eight variable only two variables namely job satisfaction and job commitment exhibited positive and significant relationship with communication linkage use of researchers for transfer of technology to extension personnel. However, non-significant relationship of education, job experience, family background, parental occupation and trainings attended and communication facilities was established with the communication linkage use for transfer of technology to extension personnel. The variables of family background and training attended have shown negative trend. This speaks that respondents in majority belong to rural family background and low exposure to trainings was found to have lower linkage use. This might be due to the fact that majority of scientists regarded extension work as less rewarding and higher experienced researchers have not contributed much in transfer of technology work due to being over busy in administrative / managerial work. The significant relationship between the independent variables of job satisfaction and job commitment clearly pointed out that the researchers' technology transfer linkage mechanism will be higher provided they are satisfied with their job and committed to their job. Thus the null hypotheses are partially rejected. The findings of the study are in line with the findings of Sanoria and Singh (1979), Veeraswamy et al. (1992) and Daivadeenam and Satyanarayana (1991) who reported positive and significant association of job satisfaction and job commitment of employees with their job performance.

The Table 4 depicts that amount of variation in communication linkage use of researchers for transfer of farm technology to extension personnel was jointly explained by eight variables to the extent of 26.15 per cent. The calculated F value of 1.37219 (8 and 31 d.f.) was found to be non significant. The only variable i.e. job commitment contributed significantly.

Table 4. Correlation and multiple regression analysis of researchers' independent variables with communication linkage mechanism for transfer of farm technology to extension personnel

S. No.	Independent variable	Correlation coefficient ('r' values)	Regression coefficient ('b' values)	Standard error	't' values
1	Education	0.10717	1.79161	5.952193	0.301
2	Job experience	0.11253	0.11818	0.478462	0.247
3	Family background	-0.10251	-0.32320	0.93953	0.344
4	Parental occupation	0.12279	0.55894	1.126895	0.496
5	Trainings attended	-0.15948	-0.52226	0.55797	0.936
6	Job satisfaction	0.36974*	0.31310	0.175504	1.784
7	Communication facilities	0.21399	0.21419	0.781715	0.274
8	Job commitment	0.45731**	0.68769	0.312729	2.199*

*Significant at 5% level of probability **Significant at 1% level of probability. R² = 0.2615080, F = 1.37219

Table 5: Correlation and multiple regression analysis of researchers' independent variables with communication linkage mechanism for transfer of farm technology to farmers

S. No.	Independent variable	Correlation coefficient ('r' values)	Regression coefficient ('b' values)	Standard error	't' values
1	Education	0.08437	0.20497	4.880238	0.042
2	Job experience	0.14619	0.10261	0.418816	0.245
3	Family background	0.14273	0.76413	1.117149	0.684
4	Parental occupation	-0.17256	0.56410	0.97934	0.576
5	Trainings attended	0.11311	0.20081	0.595875	0.337
6	Job satisfaction	0.30328	0.25675	0.456039	0.563
7	Communication facilities	0.17552	0.21131	0.268501	0.787
8	Job commitment	0.37609*	0.49727	0.291142	1.708

*Significant at 5% level of probability $R^2 = 0.2071576$, $F = 1.0125$

Association of researchers' independent variables with communication linkages used for transfer of technology to farmers: Table 5 shows that out of eight variables only one variable of job commitment found positive and significant relationship. This speaks that more the researchers are committed to their job, higher will be use of communication linkage mechanism for transfer of technology to farmers. Thus, the null hypotheses are partially rejected. However, non significant relationship with education, job experience, family background, parental occupation, trainings attended, job satisfaction and communication facilities was obtained, but parental occupation have shown negative trend with linkage use for transfer of technology to farmers. This might probably be due to their least interest towards this function as compared to those researchers who belonged to farming community as half of the respondents' parental occupation was other than farming. The non significant relationship of said variables might be due to fact that the transfer of technology work by researchers were confined to limited extent, less rewarding and it is mandatory work of extension system. The findings get strength from past studies of Sanoria and Singh (1979), and Daivadeenam and Satyanarayana (1991) who also found positive and significant association between job commitment and information behaviour of researchers.

The R^2 value suggests that amount of variation in communication linkage use of researchers for transfer of technology to farmers jointly contributed by eight variables to the extent of 20.71 per cent was found to be non-significant. However, regression coefficient of none of the variable contributed significantly to the total variation in linkage use of researchers.

Researchers' personal and institutional problems with extension as well as client system: A cursory look at the data in Table 6 indicates that poor infrastructure facilities like vehicle, funds, staff, communication facilities, technical inputs etc; lack of policy support for marketing, subsidy, electricity, PHT handling etc; poor economy, literacy, risk bearing, customary nature of farmers and lack of researches on different aspects in integrated manner were prominent problems as perceived by 95, 90, 87.5 and 80 per cent researchers in maintaining the proper linkages and ranked I, II, III and IV respectively. The

other problems like lack of cooperation; lack of motivation, prestige and rewarding values for extension work and busy in obligatory work other than research were also perceived and ranked accordingly. The least prominent problems were risk in technology transfer work, lack of experiences in transfer of technology and less opportunity and hesitation in interaction. Thus, it may be concluded that majority of respondents reported infrastructural, policy support, poor condition of farmers and non-availability of alternative researches as problems in maintaining the proper linkages by them with extension as well as client logistic because of reduction in budgetary support in five-year plans and poor prices of farm produce, risk in technological adoption by farmers etc. These reasons might look responsible for poor linkage mechanism with extension and client system. The finding of this study got strengthen with the past researches of Singh and Laharia (1992), Dehai and Yonggong (1994) and Reddy & Reddy (1998) who also reported more or less similar constraints in maintaining linkages with extension and clientele systems

Table 6. Researchers' personal and institutional problems with extension as well as client system N=40

S. No.	Nature of Problem	f	%	Rank order
1.	Lack of motivation, prestige and rewarding values for extension work	25	62.5	VI
2.	Busy in obligatory work other than research	21	52.5	VII
3.	Less opportunity and hesitation in interaction	19	47.5	VIII
4.	Poor infrastructure facilities like vehicle, funds, staff, communication facilities, technical inputs etc	38	95.0	I
5.	Risk in technology transfer work	16	40.0	X
6.	Lack of experiences in transfer of technology	18	45.0	IX
7.	Lack of co-ordination among various units	29	72.5	V
8.	Lack of proper documentation of problems (feed back) by extension personnel	21	52.5	VII
9.	Lack of researches on different aspects in integrated manner	32	80.0	IV
10.	Lack of policy support for marketing, subsidy, electricity PHT handling etc	36	90.0	II
11.	Poor economy, literacy, risk bearing and customary nature of farmers	35	87.5	III

Suggestions of researchers: Joint programme planning, execution and follow up mechanism should be adopted for linkage activities. Policy support by government for more budgets, marketing, PHT handling etc. should be extended. Infrastructural support like staff, vehicle, communication facilities, technical inputs etc. for more effective linkages should be provided. Organization of special workshops and training sessions for both systems for utilitarian purpose should be initiated. Laying out demonstration units, OFT's, FLD's, village adoption to convince about technology to extension personnel and farmers should be a regular feature. Better management of mass media for popularization of timely reliable farm information. Feasible technological options for different farming systems should be developed. Provisions for incentive and rewards will be helpful in motivating the staff for better delivery of goods.

CONCLUSION

On the basis of findings of the study, it may be concluded that majority of researchers possessed Ph.D. (Ag.) degree, more than 10 years of research experience, rural family background, farming as parental occupation, attended more than two trainings, low to medium level of job satisfaction,

communication facilities and job commitment. Researchers mostly used ZREAC meeting, research reports, personal contacts, trainings, professional meetings and monthly meetings. These methods/media/channels were obligatory on them to provide scientific information. However, researchers most frequently utilized demonstrations, trainings, kisan mela, personal visits/farm and home visits and publications/popular articles for transfer of technology to farmers. It showed poor communication linkage mechanism with farmers. Correlation analysis revealed that only two variables namely, job satisfaction and job commitment in researchers'-extension personnel communication linkage while only job commitment variable in researchers'-farmers communication linkage had positive and significant relationship. Researchers regarded extension work as less rewarding, not contributing much and confined to limited extent in transfer of technology work. They had poor infrastructural facilities and lack of policy support in maintaining proper linkages with other systems. On the whole majority of researchers suggested to improve on joint collaboration among the partners of the system along with policy and infrastructural support from government to strengthen the existing intersystem linkage mechanisms.

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