Study on Knowledge, Communication & Adoption Practices in Livelihood Generation of Livestock Owners in Coastal Agro-Climatic Zone Of West Bengal, India

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ABSTRACT

Livestock farming plays a significant role in supplementing family income and generating gainful employment in rural farming sector in India. So, improving productivity and profitability of these need based entrepreneurial sectors necessities scientific knowledge based communication and adoption practices for better livelihood generation of the rural stakeholders. Considering the harsh, adverse agro-climatic scenario of coastal Sundarban regions of West Bengal, orientation of livestock owners with advanced livestock farming practices is crucial. In this backdrop of fact, the study was promulgated to explore the factor related to knowledge based communication and adoption practices by rural livestock owners in these regions of W.B., India. Total 540 no of sample respondent were randomly selected for collection of data in which 216 no's from Dairy farmers, 216 no's from small animal farmers & 108 nos. from poultry farmers from this coastal zone of West Bengal. The study revealed that greater numbers of selected respondents belonged to middle aged, marginal category, Hindu religion, married, lower education, and poor income status. Labor and cultivation were the primary occupation to maintain their livelihood along with traditional A.H. practice as ancillary support. The study explored that among all variables, income, communication source, attitude & knowledge level were key elements which directly and indirectly helped to improve adoption index of stakeholders through successful entrepreneurship development in the zones. The majority of selected entrepreneurs had medium level of Knowledge and adoption about improved A.H. practices in the zone. The study reveals that emphasis should be given on women and youth especially for their potential empowerment as well as livelihood generation through rural scientific small animal & poultry farming practices in this region of West Bengal, India.

Key words: *Knowledge; Adoption; Livelihood; Coastal; Livestock owner; Agro-climate;*

Livestock farming plays a significant role in supplementing family income and gainful employment in rural sector, particularly, among poor farmers and farm women in India. Livestock sector contributes 6.5 per cent of GDP and 27 per cent of the total agricultural output of the country. This sector employs 11 million people in principal status and 8 million people in subsidiary status (*GOI, 2003*). But, the per capita production of Indian livestock is one of the lowest in the world, due to reasons that the farmers do not adopt improved animal husbandry practices at the desired level. So, improving productivity and profitability of these need based entrepreneurial sectors necessities scientific knowledge based adoption practices for better livelihood generation of the rural stakeholders. Among the 06 agro-climatic zones of the state of West Bengal, Coastal saline region has influence on livestock production and productivity directly, as livelihood of majority of the rural stakeholder in this region primarily depends on small scale traditional livestock production system. Even the different socio -economic conditions of the state influence the livestock farming as a whole. To enhance the production potential of the livestock distributed in this region of our country, the only way is to introduce improved Animal Husbandry technologies for mass adoption and to create the critical and necessary

infrastructural facilities important for adoption of the Animal Husbandry practices. Considering, the adverse agro-climate of coastal Sundarban regions of the state West Bengal, the study was conducted to reveal livelihood status of livestock owners through improved knowledge & adoption practices in Costal Sundarban region of the state W.B., India.

METHODOLOGY

In the study, one district from coastal agro-climatic zone of Eastern India i.e. West Bengal was purposively selected. Out of total 312 Gram Panchayets (GP), 16 GPs was selected purposively (5% of 312, i. e., 16 GPs). All the villages under 16 GPs have been taken into consideration for this study. Therefore, total number of villages selected for the study was 108 nos. From each village, two Dairy, two small animal & one Poultry owners (02+02+01=05 Nos.) were selected randomly. In this way, 540 nos. of livestock-SA & Poultry owners were selected randomly in which 216 from Dairy, 216 from Small animal & 108 from Poultry Owners from Coastal zone formed sample population. The field investigation was carried out during December, 2014 to December, 2015 with the help of the pre- tested structured interview schedule constructed for the study. Thirty five (35) no's of independent variables were selected in which 14 no's of socio-economic, 02 no's Communication, 03 no's administrative and 16 no's socio- psychological variables applied to assess the communication and adoption status of selected livestock -Poultry owners of coastal agro climatic zone of W.B, India. The independent variables were measured with readily available scales and few scales were also developed which were not available. Adoption of selected improved Animal Husbandry practices was dependent variable which was measured by adoption index method (*Dasgupta, 1968*). The collected data was computed and analyzed by statistical methods i.e. Mean ± SE, Co-efficient of correlation, MWU test, Path Analysis, Factor Analysis, MDS Indexing & Multiple Regression analysis for better interpretation of the results.

RESULTS AND DISCUSSION

A perusal of the Table 1 expressed that the adoption index in IAHP of selected Dairy farmers in the Zone were positively and significantly correlated with the

Table 1. Relationship between selected independent & dependent variable (adoption index in IAHP) of livestock owners in coastal agro-climatic zones of W.B., India

Variables	Coastal Agro-climatic zone(S24Pgs)		
	Dairy farmers	S.Animal farmers	Poultry farmers
Sex	-0.108	-0.005	-0.134
Age	0.029	0.078	-0.007
Religion	***-0.215***	-0.063	0.058
Marital Status	0.102	-0.059	0.073
Income	***0.284***	0.208	**-0.204**
Oth Income	***0.287***	***0.186***	0.279
Tot Income	***0.482***	***0.284***	0.073
Pathology Centre	0.083	***0.253***	***0.342***
Caste	0.039	0.025	***0.25***
Milk Productivity	***0.167***	***0.337***	***0.333***
Occupation	***0.178***	***0.204***	**-0.237**
Education	***0.52***	***0.351***	0.122
Fam. Edu Stat	***0.413***	***0.588***	***0.412***
Fam_Type	***0.202***	**-0.134**	0.169
Fam_Size	***0.27***	0.037	0.054
Land	***0.385***	***0.273***	-0.165
House	***0.314***	**0.154**	0.005
Farm Power	0.107	***0.296***	-0.127
Mat Possession	-0.005	-0.01	***0.316***
Economic Motiv.	**-0.165**	0.04	0.03
Attitude	***-0.301***	0.093	-0.161
Knw_Ai	-0.034	0.055	**-0.239**
Knw_Vac	-0.032	***-0.227***	***0.298***
Knw_De	-0.12	***-0.225***	0.17
Knw_Gfc	-0.088	***-0.306***	-0.068
Knw_Gff	***0.201***	***-0.164***	0.187
Knw_Cf	***0.389***	***-0.189***	0.043
Knw_Col	**-0.17**	***-0.327***	-0.011
Knw_Goat	-0.004	-0.062	***0.315***
Knw_Pig	-0.022	***-0.184***	***0.268***
Knw_Duck	-0.039	-0.01	***-0.22***
Knw Poultry	-0.097	-0.019	-0.187
Knw_Milk	-0.114	-0.074	***-0.32***
Att. Employment	0.082	**-0.138**	-0.186
Att Income	-0.061	***-0.219***	***-0.251***
Att Productivity	0	-0.064	***0.3***
Mass Media	***0.318***	**0.148**	**0.23**
Per Cosmopolite	**0.170**	***0.181***	0.1
Per Localite	***0.246***	**0.17**	-0.15
Communication	***0.349***	***0.204***	0.078
Com Skill	0.01	***-0.145***	-0.014
Marketing Orient.	0.03	0.02	***0.554***
Risk Orientation	***-0.19***	-0.132	***0.227***
Social Participation	***0.475***	0.054	-0.087

N.B. = Bold values are significant at 5% level & Bold and italics value are significant at 1% level.

variables like-Total Income, occupation, milk productivity, education of respondent, family education status, house type, mass media, personal Cosmo politeness, communication sources at 1 per cent level of significance and at 5 per cent level of significance. In contrary, the adoption index of selected Dairy owners have negative significant correlation with religion, economic motivation, attitude, knowledge in colostrum feeding at 1 per cent & at 5 per cent level of significance.

The Tabular facts indicated that the adoption index in IAHP of selected small animal owners in the Zone have positive significant correlation with the variables like-income, occupation, milk productivity, education, family education status, farm power, land, house type, mass media, communication at 5 per cent level and at 1 per cent level of significance. In reverse, the adoption index in IAHP of selected small animal owners were negative significant correlation with family type, communication skill, attitude in income generation, employment, knowledge in IAHP at 5 per cent level and at 1 per cent level of significance. The table also revealed that the adoption index in IAHP of selected Poultry owners in the zone were significant correlation with the variables such as-caste, milk productivity, pathology Centre, material possession, family education status, mass media, attitude in productivity, marketing orientation at 1 per cent & 5 per cent level of significance.. In reverse, the variables like –income, occupation, attitude towards income, knowledge in milk productivity at 1 per cent & at 5 per cent level of significance with adoption index in IAHP of selected Poultry owners in CA zone of W.B.

The tabular findings finally explored that composite adoption index in IAHP of selected Dairy-small animal & Poultry owners in coastal zone were positively and significantly correlated with the variables like -total income, milk productivity, occupation, education of respondent, family education status, land holding, Mass media at 1 per cent & at 5 per cent level of significance. In contrast, the variables like- knowledge in deworming, Vaccination, Green fodder cultivation, Green fodder feeding, concentrate feeding, colostrum feeding, piggery, attitude in income generation, communication skill had negative significant correlation at 1 per cent & at 5 per cent level of significance with adoption index in IAHP of selected Livestock & Poultry owners in coastal zone of India.

The following previous observations will support the present study to get better realization. Knowledge of dairy farmers was found positively correlated with the education level of the head of the family as reported by *Hazarika (1983)* and *Chung (1986)*. *Rao (1975), Kherde et. al. (1978)* reported non-relationship between herd size and knowledge of the respondents. *Pawar (1979)* had stated negative correlation of knowledge gap with attitude towards dairy farming. *Sundararwami et. al. (1978)* had made positive relation with utilization of mass media. *Singh (1982)* reported that age had no significant relationship with adoption of improved dairy innovations. *Gupta (1978)* found no significant impact of income with the adoption of improved A.H. technology. *Sayeedi (1983)* and *Dana et. al. (1998)* found significant relation of family educational status with adoption of dairy innovations. *Tripathi & Kunzru (1992), Sharma (1994),* also worked on various independent variables relating to relationship with the adoption of different A. H. Practices. *Teklewold et. al. (2006), Goswami (2007),* etc. also reported different observations on adoption behaviour related to different variables which supported the present findings. *Deshmukh et. al. (2007)* reported that age, education, house type, social participation, risk orientation, mass media, marketing orientation, knowledge etc. were significantly associated with the adoption of dairy practices. *Yadav & Nagar (2021)* found that adoption of dairy farming technologies was positively and significantly related with thirteen independent

The Result of Path Analysis for selected Dairy, Small animal & Poultry farmers of the zone represent the direct and indirect effects of the 44 selected independent variables on adoption index of improved farming Practices. A detailed look at table explored that *personal cosmopoliteness has the largest direct effects* on adoption index of dairy & small animal farmers and *Mass media sources* has largest direct effect on Poultry farmers followed in 05 no's of descending order variables such as-Mass media, personal localiteness, total income, social participation, Education, family education status, knowledge in colostrum feeding, GF feeding, etc. had positive direct effect on adoption index of all stakeholders under coastal zones of eastern India i.e. W.B.

As regards total indirect effects, it was clear that-communication sources has highest indirect effect, on adoption index of dairy, small animal & Poultry farmers,

Table 2. Path analysis of adoption index & Independent variables in relation to dairy, small animal & poultry farmers for comparative assessments of first five important factors influencing the adoption index in IAHP in coastal agro-climatic region of W.B., India.

Independent variables	Direct effect	Rank	Independent factors	Indirect effect	Rank
Dairy Farmers					
Personal C. Politeness	0.748	i	Communication sources	1.240	i
Personal localiteness	0.626	ii	Total income generation	0.340	ii
Mass media sources	0.590	iii	Attitude in Dairy farming	0.235	iii
Know. in colostrum feed	0.257	iv	Occupation	0.218	iv
Know in G. fodder feed	0.192	v	Pathology centre	0.217	v
Small Animal farmers					
Personal Cosmo politeness	1.455	i	Communication sources	3.039	i
Mass media sources	1.300	ii	Other income sources	0.345	ii
Personal localities	1.166	iii	Income generation	0.274	iii
Total Income	0.226	iv	Know in G fodder cultivn	0.136	iv
Social Participation	0.176	v	Occupation	0.123	v
Poultry Farmers					
Mass media sources	0.643	i	Communication sources	1.321	i
Personal localiteness	0.549	ii	Pathology centre	0.386	ii
Personal Cosmo politenes	0.436	iii	Know. in Poultry farming	0.281	iii
Know. in G. Fod. cultivn	0.260	iv	Social Participation	0.242	iv
Edun of the respondents	0.170	v	Know. in colostrum feed	0.206	v

Table 3. Knowledge & adoption level of livestock & poultry owners about improved animal husbandary practices in coastal agro-climatic zones of W.B., India

Category	Level	Statistical parameter	Knowledge level	Adoption level
Dairy Farmers	Low	< (Mean-SD)	26.90	16.70
	Medium	(Mean - SD) to (Mean+SD)	68.00	70.20
	High	> (Mean+SD)	5.10	13.10
Small Animal Owners	Low	< (Mean-SD)	23.60	18.50
	Medium	(Mean - SD) to (Mean + SD)	63.30	64.50
	High	< (Mean-SD)	13.10	17.00
Poultry Owners	Low	< (Mean-SD)	20.40	11.10
	Medium	(Mean - SD) to (Mean + SD)	64.80	77.80
	High	< (Mean-SD)	14.80	11.10

Table4. Utilization of different information sources in adoption of IAHP by selected animal husbandary owners in coastal agro climatic zones of W.B.

Category of Farmers	Sources of Information		
	Mass media (No. & %)	Personal cosmo politeness (No. & %)	Personal localiteness (No. & %)
Dairy farmers(214)	87(40.65)	95(44.39)	121(56.54)
S. Animal Owners (214)	93(43.46)	102(47.66)	110(51.40)
Poultry Farmers(108)	42(38.89)	57(52.78)	72(66.67)

whereas- total income generation, attitude in dairy farming, occupation, Pathology centre, other income sources, , knowledge in green fodder cultivation, Poultry farming, colostrum feeding, Social participation and occupation were other important factors which exerts their largest indirect . The Analytical study suggest that *Personal cosmo politeness, localitenes, Mass media sources, total income source, communication source, Occupation* have not only direct effect on adoption index of all livestock & Poultry owners but also these factors influences indirectly in association with a large number of variables which perform their role through

these factors. So, these factors have come out to be a key element which directly and indirectly helps to improve the adoption index through success entrepreneurship development. *Goswami (2000)* in his findings reported that the first five factors having largest direct effect on adoption of selected A. H practices in case of saline belt livestock owners were social participation, Knowledge about cultivation of green fodder, personal localite, family educational status and age while mass media communication, communication skill, risk orientation, knowledge about deworming and attitude towards dairy farming exerted first five largest indirect effects. *Depanka et.al.(2021)* revealed that the highest adoption of scientific practices was observed in feeding followed by management and health care practices, whereas, the least adoption was observed for breeding practices.

The Table revealed that level of knowledge & adoption of selected A.H. owners about improved farming practices in coastal agro-climatic zone of W.B., India. The fact of the table explored that in knowledge level on advanced A.H. farming practices, majority (63-68%) of selected stakeholders have medium knowledge level on scientific farming practices in the CAZ of West Bengal, India, whereas only small section of selected owners have low & high level of knowledge about recommended practices. *Sanchita et.al.(2020)* found that majority of the respondents had the medium level knowledge followed by high and low level of knowledge regarding improved dairy farming practices and supported the present findings of the study. *Triveni et.al (2018)* revealed that more than half of the dairy farmers possessed medium level of knowledge followed by farmers with low and high level of knowledge respectively.

The findings revealed that in adoption level on improved A.H. practices, majority (64-77%) of selected stakeholders have also medium adoption level on scientific farming practices in CAZ of W.B., whereas only small part of selected owners have low & high adoption level about recommended practices. So, findings of the study suggested that majority of selected entrepreneurs have medium knowledge and adoption level in improved farming practices in coastal Agro climatic zone of West Bengal, which is very much indicative in relation to future animal Husbandry development strategy as well as planning of rural Eastern region of India. The study of *Yadav & Nagar(2021)* indicated that adoption level of farmers regarding dry fodder, , colostrums feeding to newly born calves, deworming and drinking water were quite high among the dairy farmers in Bhilwara district of Rajasthan and supported the present study.

The Tabular findings depicted that maximum selected Dairy farmers utilize various personnel localite sources (56.54%) Such as- neighbors, friend & Relatives etc. followed by Personal Cosmopoliteness (44.39%) and Mass media sources (40.65%) as information sources regarding adoption of improved animal Husbandry practices in rank wise descending order. Similarly, considering selected small animal owners in majority utilize various personnel localite sources (51.40%) followed by Personal Cosmopoliteness (47.66%) such as- BLDO, University Ext. Personnel, Bank personnel, Input dealers etc.) and Mass media sources (43.46%) as information sources regarding adoption of improved animal Husbandry practices in descending order in the zone. Concomitantly, majority of selected Poultry owners in the zone utilized personnel localite sources (66.67%) followed by Personal Cosmopoliteness (52.78%) such as- and Mass media sources (38.89%) Such as- Radio, TV, Newspaper, Poster, exhibition etc. as information sources regarding adoption of improved animal Husbandry practices in descending order in the study area of the zone.

CONCLUSION

The analytical study revealed that greater numbers of selected Animal Husbandry owners belonged to the middle age (30-50 years) group, marginal category, Hindu religion, married, lower education and nuclear family with very poor income status. Labor and cultivation were the primary occupation to maintain their livelihood along with traditional animal husbandry practice as ancillary support. The study explored that among all independent variables, income source, several communication source, attitude & knowledge level were the key elements which directly and indirectly helped to improve the adoption index of stakeholders through successful entrepreneurship development in the zones of W.B. India. The above all variables had positively and significantly contributed towards the variability in adoption index in IAHP of selected stakeholders in the zones. The essential targeted variables such as-

Knowledge in improved A.H. Practices, communication source, marketing orientation, total income, attitude in productivity and religion were the most important variables to measure the adoption index about selected IAHP in the coastal ACZ of W.B.. Performance was comparatively better for small animal farmers of the zones. Personal localite sources of information were used followed by Personal cosmopolite sources and mass media sources of information were used in the coastal Zones of West Bengal about adoption of IAHP. The majority of selected entrepreneurs had medium level of Knowledge and adoption about improved animal husbandry practices in the coastal agro-climatic Zones of W.B., India. The study was conducted to recommend specific guidelines for prospective planning of livestock development in the coastal Agro-climatic region of India i.e. W.B. The research findings of the study recommended that, during formulating planning, emphasis should be given on women folk especially for their substantial empowerment through livestock enterprises The basic parameters are more or less same in this region of India for livestock development. Therefore, the policy makers have to consider all these parameters for all categories of farmers. Only the degree and magnitude of the parameters will vary depending upon different categories of farmers for which experts or technologists are to be consulted during planning. Small animal farming should be encouraged for all types of people in Coastal agro-climatic zones in West Bengal, India.

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