

## Adoption Behaviour of the Dairy Farmers in Co-Operative Farming System

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### ABSTRACT

*The present study was carried out at purposively selected Gaighata and Bagdah block of North-24 Parganas district, West Bengal. From each of the purposively selected two blocks, 25 per cent of the Village Level Milk Co-operative Societies were selected randomly. The study revealed that adoption of vaccination was highly correlated with all the socio-psychological and communication variables in both Member of Cooperative Society (MCS) and Non-member of Cooperative Society (NMCS). On path analysis, innovation proneness and knowledge about deworming had come out to be the key variables that directly and indirectly influence the adoption of vaccination in MCS and NMCS, respectively.*

**Key words:** Adoption; Vaccination; Dairy farmers

Adoption of any improved technology involves a process in which awareness created, attitudes are changed and favourable conditions for adoption are provided. Wilkening (1953) described the adoption, deciding and acting over a period of time. To enhance the sustainability of production potential of milch animals we need to prevent cattle from getting infected by various diseases. For this purpose mass adoption of vaccination against contagious diseases by the dairy farmers is very much crucial. Adoption behaviour of the dairy farmers depends on education, knowledge, attitude, risk orientation, innovation proneness (Bhople and Thakare, 1994: 153-154; Kunzru and Tripathi, 1994: 501-507), etc. It was found that the adoption of disease control practices was influenced by herd size, knowledge, family education (Tyagi, 1975). Previous study also revealed that knowledge, extension contact, media exposure, size of landholding was associated with the adoption of disease prevention practices (Rath, 1978). Most of the respondents in Haryana did not know the contagious nature of livestock diseases. Most of the respondents were not aware of the disease control measures. Majority of the cattle owners showed some faith in vaccination and only 28 per cent accepted all types of vaccination (Sharma, 1974: 30-35). Considering this theoretical back up, the study was carried out to find the correlation of socio-economic, socio-psychological and communication characteristics of the dairy farmers with adoption of vaccination against contagious diseases and also to find out the key variables that influence the adoption of vaccination against contagious diseases.

### METHODOLOGY

The North 24-Parganas district was selected purposively. Gaighata and Bagdah blocks of North-24-Parganas in West Bengal were purposively selected for the present study. From each of the purposively selected two blocks, 25 per cent (approximately) of the Village Level Milk Co-operative Societies were selected randomly. In this way 10 Village Level Milk Co-operative Societies (25 Per cent) from Gaighata Block and 20 (25.64 Per cent) from Bagdah Block were selected randomly. Therefore, a total of 30 Village Level Milk Co-operative Societies were selected for the study. From each of the selected milk co-operative societies four dairy farmers were selected randomly out of which two were Member of Co-operative Society (MCS) and two were Non-member of Co-operative Society (NMCS). In this way, 60 members of Co-operative Society and 60 non-members (total 120 respondents) were selected. Before going to final data collection, a pilot study was carried out and accordingly appropriate changes in the construction and sequence of interview schedule were made. The schedule was administered to the respondents and the responses were recorded. Adoption was measured by the adoption index method developed by (Dasgupta, 1968: 1-21).

### RESULTS AND DISCUSSION

Pearson Correlation co-efficient between adoption of vaccination against contagious diseases and the independent variables (selected socio-economic, socio-psychological and communication variables) were calculated for the two categories of dairy farmers

(MCS and NMCS). The results have been summarized in the Table-1.

*Socio-economic Variables* : Table-1 indicated that the adoption of vaccination against contagious diseases was negatively and significantly correlated with age and farm power at 1 per cent level and at the same time positively and significantly correlated with education of the respondent and house type at 5 per cent level in case of dairy farmers of co-operative society. But in case of non-members, adoption of vaccination against contagious diseases was negatively and significantly correlated with age and family type at 5 per cent level and positively and significantly associated with house type at 5 per cent level and education of the respondent, family educational status, material possession at 1 per cent level.

Table 1. Zero order Correlation between adoption of Vaccination against contagious diseases like B.Q., F.M.D. etc. and independent variables.

Independent Variables	Co-efficient of Correlation ( $\gamma$ ) values	
	Member Co-operative Society (n= 60)	Non-member Co-operative Society (n= 60)
<b>Socio-Economic Variables</b>		
Age	-0.466**	-0.328*
Occupation	0.005	0.092
Caste	0.047	-0.186
Education of the respondent	0.303*	0.386**
Family educational status	0.072	0.541**
Family type	-0.234	-0.300*
Family size	-0.156	-0.183
Land	-0.240	-0.008
House type	0.271*	0.280*
Farm power	-0.359**	-0.181
Material possession	0.094	0.335**
Economic status	-0.038	0.239
<b>Socio-Psychological Variables</b>		
Innovation proneness	0.882**	0.827**
Attitude towards dairy farming	0.628**	0.584**
Risk orientation	0.642**	0.588**
Knowledge level about Artificial insemination.	0.788**	0.779**
Knowledge level about deworming	0.771**	0.776**
Knowledge level about feeding of green fodder	0.304*	0.434**
Knowledge level about feeding of concentrates	0.715**	0.668**
<b>Communication Variables</b>		
Mass media communication	0.420**	0.399**
Personal cosmopolite	0.353**	0.465**
Personal localite	0.298*	0.646**
Communication sources	0.443**	0.644**
Urban contact	0.228	0.498**

N.B. \*  $P < 0.05$ ; \*\*  $P < 0.01$

The adoption of vaccination against contagious diseases was not significantly correlated with occupation, caste, family size, land and economic status in both the cases (Goswami et al., 2001: 226-228).

*Socio-psychological variables*: Table 1 indicated that the adoption of vaccination against contagious diseases was positively and significantly correlated with knowledge about green fodder feed at 5 per cent level and attitude towards dairy farming, risk orientation, knowledge about AI, deworming and feeding of concentrates at 1 per cent level in case of Members of Co-operative Society. But in case of non-members, adoption of vaccination against contagious diseases was positively and significantly correlated with all the socio-psychological variables viz., innovation proneness, attitude towards dairy farming, risk orientation, knowledge about AI, deworming, feeding of green fodder, feeding of concentrates at 1 per cent level (Goswami et al., 2001: 226-228; Sharma, 1979).

*Communication variables*: Table 1 indicated that personal localite source found to be positively and significantly correlated at 5 per cent level and mass media communication, personal cosmopolite and communication source at 1 per cent level with the adoption of Vaccination against contagious diseases in Member Co-operative Society. But in case of Non-member Co-operative Society, adoption of Vaccination against contagious diseases was positively and significantly correlated with all the communication variables viz. mass media communication, personal localite, personal cosmopolite, communication source and urban contact at 1 per cent level (Goswami et al., 2001: 226-228).

*Path analysis on the basis of relationship between adoption of vaccination against contagious diseases and the exogenous variables*: The results of path analysis (Table 2) for Member Co-operative Society represented the direct and indirect effects for 24 selected exogenous variables on adoption of vaccination against contagious diseases.

Table 2 revealed that innovation proneness had the largest direct effect (0.522) on adoption of vaccination against contagious diseases in case of dairy farmers of Member Co-operative Society. The residual effect had been found to be 0.2843 or, in a way, 28.43 per cent of the total variabilities had been left unexplained.

Further processing of the data revealed that out of 24 exogenous variables, 12 had large indirect effect through innovation proneness which are education of the respondent, house type, attitude towards dairy farming, risk orientation, knowledge about AI, deworming, green fodder feeding, concentrate feeding, mass media communication, personal cosmopolite, personal localite

and communication source. On the other hand, five variables viz., family educational status, land, material possession, economic status, urban contact exerted large indirect effect through cosmopolite sources.

Table 2 Path Co-efficient showing the direct and indirect effects of selected independent variables on adoption of vaccination against contagious diseases in Non-member Co-operative Society.

Independent Variables	Direct effect on adoption of vaccination against contagious diseases	Indirect effect on adoption of vaccination against contagious diseases through other independent variables
(X <sub>1</sub> ) Age	0.028	X <sub>8</sub> 0.116 X <sub>14</sub> 0.073 X <sub>16</sub> 0.040
(X <sub>2</sub> ) Occupation	0.219	X <sub>5</sub> 0.019 X <sub>8</sub> 0.017 X <sub>12</sub> 0.016
(X <sub>3</sub> ) Caste	-0.117	X <sub>8</sub> 0.033 X <sub>18</sub> 0.032 X <sub>5</sub> 0.027
(X <sub>4</sub> ) Education of the respondents	-0.088	X <sub>17</sub> 0.152 X <sub>24</sub> 0.143 X <sub>13</sub> 0.136
(X <sub>5</sub> ) Family educational Status	0.139	X <sub>17</sub> 0.183 X <sub>13</sub> 0.142 X <sub>24</sub> 0.131
(X <sub>6</sub> ) Family type	-0.230	X <sub>7</sub> 0.085 X <sub>2</sub> 0.038 X <sub>22</sub> 0.015
(X <sub>7</sub> ) Family size	0.122	X <sub>4</sub> 0.033 X <sub>12</sub> 0.021 X <sub>16</sub> 0.014
(X <sub>8</sub> ) Land	-0.331	X <sub>12</sub> 0.148 X <sub>24</sub> 0.109 X <sub>17</sub> 0.058
(X <sub>9</sub> ) House type	-0.011	X <sub>12</sub> 0.165 X <sub>5</sub> 0.069 X <sub>17</sub> 0.049
(X <sub>12</sub> ) Farm power	-0.176	X <sub>7</sub> 0.046 X <sub>24</sub> 0.032 X <sub>2</sub> 0.029
(X <sub>11</sub> ) Material possession	-0.063	X <sub>24</sub> 0.161 X <sub>12</sub> 0.154 X <sub>13</sub> 0.106
(X <sub>12</sub> ) Economic status	0.218	X <sub>24</sub> 0.126 X <sub>17</sub> 0.097 X <sub>5</sub> 0.077
(X <sub>13</sub> ) Innovation proneness	0.378	X <sub>17</sub> 0.347 X <sub>24</sub> 0.134 X <sub>23</sub> 0.109

(X <sub>14</sub> ) Attitude towards dairy farming	-0.141	X <sub>17</sub> 0.299 X <sub>13</sub> 0.270 X <sub>24</sub> 0.183
(X <sub>15</sub> ) Risk orientation	0.072	X <sub>17</sub> 0.304 X <sub>13</sub> 0.204 X <sub>24</sub> 0.146
(X <sub>16</sub> ) Knowledge about AI	-0.095	X <sub>17</sub> 0.362 X <sub>2</sub> 0.308 X <sub>24</sub> 0.117
(X <sub>17</sub> ) Knowledge about deworming	0.421	X <sub>13</sub> 0.312 X <sub>24</sub> 0.140 X <sub>23</sub> 0.105
(X <sub>18</sub> ) Knowledge about green fodder feeding	-0.167	X <sub>17</sub> 0.253 X <sub>13</sub> 0.223 X <sub>24</sub> 0.130
(X <sub>19</sub> ) Knowledge about concentrate feeding	0.023	X <sub>17</sub> 0.326 X <sub>13</sub> 0.274 X <sub>24</sub> 0.168
(X <sub>20</sub> ) Mass media utilization	0.089	X <sub>13</sub> 0.214 X <sub>17</sub> 0.160 X <sub>23</sub> 0.108
(X <sub>21</sub> ) Utilization of personal cosmopolite sources	0.027	X <sub>17</sub> 0.251 X <sub>24</sub> 0.207 X <sub>13</sub> 0.186
(X <sub>22</sub> ) Utilization of personal Localite sources	-0.082	X <sub>17</sub> 0.241 X <sub>13</sub> 0.223 X <sub>24</sub> 0.152
(X <sub>23</sub> ) Utilization of communication sources	0.154	X <sub>17</sub> 0.287 X <sub>13</sub> 0.268 X <sub>24</sub> 0.203
(X <sub>24</sub> ) Urban contact	0.272	X <sub>17</sub> 0.217 X <sub>13</sub> 0.187 X <sub>23</sub> 0.114

The findings suggested that innovation proneness has not only exerted large direct effect on adoption of vaccination against contagious diseases by the dairy farmers of Member Co-operative Society but a number of factors also exerted indirect effect through it. So innovation proneness had come out to be the key element which directly and indirectly promoted adoption of vaccination against contagious diseases in case of dairy farmer of Member Co-operative Society.

The results of Path analysis for Non-member Co-operative Society have been presented in table 3. Data revealed that knowledge about deworming had the largest direct effect (0.421) on adoption of Vaccination against contagious diseases in case of dairy farmers of Non-member Co-operative Society. The residual effect had been found to be 0.3435 or, in a way, 34.35 per cent of the total variabilities had been left unexplained.

Further processing of the data revealed that out of 24 exogenous variables, 12 had large indirect effect

through knowledge about deworming which are education of the respondents, family educational status, innovation proneness, attitude towards dairy farming, risk orientation, knowledge about AI, Knowledge about green fodder feeding, personal cosmopolite, personal localite, communication source and urban contact. Similarly two variables had large indirect effect through land, which are caste and age. On the other hand, family size and occupation exerted indirect effect through education of the respondents and family educational status, respectively.

Table 3. Path Co-efficient showing the direct and indirect effects of selected independent variables on adoption of Vaccination against contagious diseases in Member Co-operative Society

Independent Variables	Direct Effect on adoption of Vaccination against contagious diseases	Indirect Effect on adoption of Vaccination against contagious diseases through other independent variables
(X <sub>1</sub> ) Age	0.024	X <sub>18</sub> 0.135 X <sub>23</sub> 0.086 X <sub>10</sub> 0.022
(X <sub>2</sub> ) Occupation	-0.020	X <sub>19</sub> 0.025 X <sub>16</sub> 0.024 X <sub>3</sub> 0.022
(X <sub>3</sub> ) Caste	0.092	X <sub>19</sub> 0.059 X <sub>4</sub> 0.027 X <sub>15</sub> 0.024
(X <sub>4</sub> ) Education of the respondents	0.083	X <sub>13</sub> 0.141 X <sub>21</sub> 0.075 X <sub>19</sub> 0.073
(X <sub>5</sub> ) Family Educational Status	-0.011	X <sub>21</sub> 0.077 X <sub>19</sub> 0.052 X <sub>4</sub> 0.047
(X <sub>6</sub> ) Family Type	-0.004	X <sub>23</sub> 0.057 X <sub>10</sub> 0.022 X <sub>18</sub> 0.014
(X <sub>7</sub> ) Family Size	-0.116	X <sub>23</sub> 0.053 X <sub>10</sub> 0.021 X <sub>18</sub> 0.010
(X <sub>8</sub> ) Land	-0.148	X <sub>21</sub> 0.055 X <sub>12</sub> 0.024 X <sub>9</sub> 0.022
(X <sub>9</sub> ) House Type	0.050	X <sub>13</sub> 0.142 X <sub>21</sub> 0.096 X <sub>19</sub> 0.062
(X <sub>10</sub> ) Farm Power	0.064	X <sub>18</sub> 0.050 X <sub>12</sub> 0.012 X <sub>1</sub> 0.008

(X <sub>11</sub> ) Material Possession	0.027	X <sub>21</sub> 0.039 X <sub>4</sub> 0.032 X <sub>19</sub> 0.026
(X <sub>12</sub> ) Economic Status	0.032	X <sub>21</sub> 0.082 X <sub>9</sub> 0.036 X <sub>4</sub> 0.033
(X <sub>13</sub> ) Innovation Proneness	0.522	X <sub>17</sub> 0.184 X <sub>19</sub> 0.111 X <sub>16</sub> 0.096
(X <sub>14</sub> ) Attitude towards dairy farming	0.033	X <sub>13</sub> 0.323 X <sub>17</sub> 0.141 X <sub>21</sub> 0.102
(X <sub>15</sub> ) Risk Orientation	0.093	X <sub>13</sub> 0.303 X <sub>17</sub> 0.177 X <sub>19</sub> 0.119
(X <sub>16</sub> ) Knowledge about AI	0.132	X <sub>13</sub> 0.377 X <sub>17</sub> 0.186 X <sub>19</sub> 0.123
(X <sub>17</sub> ) Knowledge about Deworming	0.271	X <sub>13</sub> 0.355 X <sub>19</sub> 0.095 X <sub>16</sub> 0.091
(X <sub>18</sub> ) Knowledge about Green Fodder Feeding	-0.242	X <sub>13</sub> 0.219 X <sub>17</sub> 0.106 X <sub>19</sub> 0.100
(X <sub>19</sub> ) Knowledge about Concentrate Feeding	0.159	X <sub>13</sub> 0.363 X <sub>17</sub> 0.162 X <sub>16</sub> 0.103
(X <sub>10</sub> ) Mass Media Utilization	-0.005	X <sub>13</sub> 0.206 X <sub>21</sub> 0.106 X <sub>17</sub> 0.098
(X <sub>11</sub> ) Utilization of Personal Cosmopolite sources	0.173	X <sub>13</sub> 0.177 X <sub>16</sub> 0.056 X <sub>19</sub> 0.051
(X <sub>22</sub> ) Utilization of Personal Localite sources	0.029	X <sub>13</sub> 0.138 X <sub>21</sub> 0.095 X <sub>16</sub> 0.070
(X <sub>23</sub> ) Utilization of Communication sources	-0.226	X <sub>13</sub> 0.217 X <sub>21</sub> 0.149 X <sub>17</sub> 0.088
(X <sub>24</sub> ) Urban Contact	-0.036	X <sub>21</sub> 0.123 X <sub>13</sub> 0.109 X <sub>19</sub> 0.074

The findings suggested that knowledge about deworming had not only exerted large direct effect on adoption of vaccination against contagious diseases by the dairy farmers of Non-member Co-operative Society but a number of factors also exerted indirect effect through it. So knowledge about deworming had come out to be the key element which directly and indirectly promoted adoption of vaccination against contagious diseases in case of dairy farmer of Non-member Co-operative Society.

## CONCLUSION

From the above study it can be concluded that innovation proneness was the key variable that directly and indirectly influenced adoption of vaccination against

contagious diseases in Member Co-operative Society, whereas knowledge about deworming was the main factor that influenced adoption of vaccination against contagious diseases both directly and indirectly in Non-member Co-operative Society.

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