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RESEARCH ARTICLE

Study on the Empowerment Status of Rural Stakeholders through Ornamental Birds Rearing in the State of West Bengal, India

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ABSTRACT

Birds contribute significantly to the environment and to human well-being by aiding in pollination, dispersing seeds, regulating pest populations, helping in waste breakdown, and offering companionship. In West Bengal, keeping ornamental birds is becoming increasingly popular because it demands minimal investment, needs only a small area, and offers emotional satisfaction. This study explored the empowerment status of rural stakeholders through ornamental bird rearing by examining their socioeconomic, communication, and socio-psychological characteristics, knowledge, attitude, and adoption of scientific practices along with entrepreneurial development. A total of 120 respondents from Cooch Behar, Howrah, Hooghly, and South 24 Parganas districts were selected randomly and data were collected using a pre-tested interview schedule. Statistical analysis was conducted using frequency, percentage, mean, standard deviation, Kruskal–Wallis test, and correlation analysis with the Statistical Package for the Social Sciences 20.0 software. Findings indicated that the majority of participants were in their middle age, married and belonged to nuclear households. Income from ornamental bird rearing formed an important part of household earnings. Respondents mainly faced constrains, such as limited technical expertise, poor marketing infrastructure and minimal professional support. It was concluded that rural stakeholders could be empowered and socio-economic development promoted through proper training, technical guidance and market development in ornamental bird rearing.

Key words: Adoption, Constraints, Development, Empowerment, Entrepreneurship, Livelihood etc., Ornamental bird

INTRODUCTION

With more than 10,000 species globally and more than 1,300 species in India, or more than 13% of all known bird species, birds are among the most significant and conspicuous animals on Earth. By pollinating plants, spreading seeds, managing pests and cleaning the environment, they are essential to preserving ecological equilibrium (Partasasmita, 2015). By consuming dead animals, some birds, such as crows and vultures, also contribute to hygienic practices (Inger *et al*., 2016). In addition to their ecological function, birds are important in culture, society, and the economy because they offer food, company, and esthetic value. Poultry and ornamental birds are the two main categories of domesticated birds. While ornamental birds, such as parrots, canaries, budgerigars, finches, lovebirds and pigeons are valued for their beauty, colorful plumage, songs and company, poultry, such as chickens, ducks and quails, are primarily raised for eggs, meat, and feathers (Roy, 2017). Ornamental bird keeping is growing in popularity in India, especially in West Bengal, because it requires little

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space, requires little investment, and has emotional advantages, especially for small families or urban households (Sreeshma *et al*., 2018). Birds have been tamed for a variety of reasons throughout history. Because of their ability to navigate, pigeons were employed for communication (Shapiro and Domyan 2013). Chickens were tamed for ceremonies and amusement (Eda, 2021). Ornamental bird keeping supports rural entrepreneurship through cage making, feed production and veterinary services while improving livelihoods. This study assesses the empowerment of rural stakeholders in West Bengal by examining their socio-economic, communication and socio-psychological traits alongside their knowledge, attitudes and adoption of scientific practices to promote sustainable development.

MATERIALS AND METHODS

The study was conducted in four purposively selected districts of West Bengal—Cooch Behar, Howrah, Hooghly and South 24 Parganas based on the density of ornamental bird owners. From each district, 30 respondents were randomly selected, making a total sample of 120 participants. Data were collected from October to November 2024 using a pre-tested interview schedule and field observations. The study considered empowerment status in pet bird rearing as the dependent variable. Sixteen independent variables were included, comprising seven socio-personal, four socio-economic, and five socio-psychological factors. Collected data were compiled, tabulated and analyzed using statistical tools, such as frequency, percentage, mean, standard deviation, Mann-Whitney U test, Kruskal-Wallis test, Chi-square test and correlation coefficient analysis. All analyses were performed using the Statistical Package for the Social Sciences version 20.0 to understand the relationships between socio-economic characteristics, adoption of bird-rearing practices and entrepreneurial development among rural stakeholders.

RESULTS AND DISCUSSION

The significant variations in important variables across the four districts were shown by the Kruskal-Wallis test in Table 1. The result of table 1 found that, in general, respondents from South 24 Parganas were older; more educated and had the most pets, which suggests that they were more involved in raising birds. Hooghly had the lowest family income, while Cooch Behar and South 24 Parganas recorded the highest. Cooch Behar had the best communication procedures, while South 24 Parganas had the worst. South 24 Parganas had the least favorable attitudes toward ornamental bird rearing, while Cooch Behar had the most favorable. Howrah and Hooghly had higher levels of knowledge, whereas South 24 Parganas had the highest adoption of ornamental bird-rearing techniques. These differences imply that participation, attitudes, knowledge, and acceptance of ornamental bird-rearing practices among rural stakeholders are influenced by demographic, economic, and regional factors (Mukherjee and Roy, 2021).

The analysis of table 2 found that middle-aged respondents were more involved in the growth of the business. They were more involved in diversification, reinvesting profits, being satisfied, and taking the lead in shaping public opinion than young and older respondents. This shows that the middle-aged group has more experience and is more active in running businesses that keep ornamental birds. Young people, on the other hand, were more interested in starting their own businesses, which shows that they are open to new ideas and ready to take risks. Diversification, reinvestment, satisfaction, and leadership did not show any major differences. However, the young group was much more likely to plan new businesses. Overall, different parts of entrepreneurship are affected by age. For example, middle-aged respondents are more concerned with stability, while young respondents are more interested in starting new businesses (Kautonen *et al*., 2014).

According to the study of Table 3, respondents who were illiterate had the highest level of business diversification, followed by those with rudimentary reading and writing abilities, while graduates had the lowest. Respondents who could only read had much larger profit reinvestment, followed by those with primary and basic literacy. Graduates expressed the highest level of happiness, followed by those with intermediate education, and those with only a high school education. Primary educated respondents were the most engaged when it came to planning

Table 1: Kruskal–Wallis test of selected independent variables and dependent variables among Hooghly, Howrah, Cooch-Behar and South 24 Parganas Districts of West Bengal

Variables	District mean rank			
	Coochbehar	South 24 Pgs	Howrah	Hooghly
Age	59.70	64.80	61.33	56.17
Education of respondent	68.15	70.28	43.47	60.10
Pet birds holding	40.50	82.33	67.60	51.57
Gross family income	74.60	74.60	76.50	16.30
Commonly used variables	69.87	50.85	65.35	55.93
Attitude in pet bird rearing	83.20	26.75	71.85	60.20
Knowledge level in pet bird rearing	59.22	51.60	65.98	65.20
Adoption index	53.70	81.42	49.83	57.05

Test statistics[a,b]					
Entrepreneurial Features	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	0.000	32.845	1.220	3.262	5.279
df	2	2	2	2	2
Asymp. Sig.	1.000	0.000**	0.543	0.196	0.071

[a]Kruskal–Wallis test. [b]Grouping variable: Gross family income

Table 2: Kruskal–Wallis test between independent variable (age) and entrepreneurship development (dependent variable) in various districts of West Bengal

Age wise mean ranks			
Entrepreneurial Features	Young (16)	Middle (90)	Elderly (14)
Enterprise diversification	56.75	61.83	56.21
Profit reinvestment	53.44	61.67	61.07
Degree of satisfaction	52.55	63.50	50.64
Plan to start new enterprise	77.25	58.00	57.43
Opinion leadership	52.91	62.12	58.75

Test statistics[a,b]					
	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	0.708	0.973	3.628	5.910	2.066
df	2	2	2	2	2
Asymp. Sig.	0.702	0.615	0.163	0.052*	0.356

[a]Kruskal–Wallis test. [b]Grouping variable: Age

new businesses, while illiterate respondents were the least. Graduate and illiterate groups exhibited the highest levels of opinion leadership. These findings suggest that education affects several facets of entrepreneurship, with less educated individuals emphasizing diversification and reinvestment while more educated respondents exhibit higher levels of satisfaction and leadership (Shane, 2003).

The study using the Kruskal-Wallis test in table 4 showed the impact of family type on the growth of entrepreneurship in ornamental bird farming was investigated using the Kruskal–Wallis test. There were also minor variations, with nuclear families scoring higher in satisfaction and joint families exhibiting higher mean ranks in profit reinvestment, diversification, and business planning. In both groups, opinion leadership was similar. Statistical analysis, however, showed that these differences were not significant because every result was higher than the significance level of 0.05. This suggests that the development of entrepreneurship is not significantly impacted by family type. In general, respondents' engagement, decision-making, and success in raising ornamental birds were not much impacted by whether they were part of a nuclear or combined family.

The study using the Kruskal-Wallis test in table 5 revealed the association between family size and

Table 3: Kruskal–Wallis test between independent variable (education of respondent) and entrepreneurship development (dependent variable) of selected districts in West Bengal

Entrepreneurial Features	MEAN rank of education of respondent						
	Illiterate (3)	Can read only (3)	Can read and write (11)	Primary (24)	Intermediate (51)	High school (20)	Graduate (8)
Enterprise diversification	90.50	50.50	74.14	63.00	59.91	57.50	38.00
Profit reinvestment	66.50	85.50	46.77	44.13	66.79	65.55	64.13
Degree of satisfaction	33.50	53.50	49.86	63.50	67.62	45.50	71.00
Plan to start New enterprise	36.00	56.00	57.82	71.00	59.53	54.00	66.00
Opinion leadership	71.50	51.67	59.68	64.06	58.67	56.63	71.50
Test statistics[a,b]							
	Enterprise diversification		**Profit reinvestment**	**Degree of satisfaction**	**Plan to start NETP**		**Opinion leadership**
Chi-square	10.405		13.812	13.089	6.524		4.036
df	6		6	6	6		6
Asymp. Sig.	0.109		0.032*	0.042*	0.367		0.672

[a]Kruskal–Wallis test. [b]Grouping variable: Education

Table 4: Kruskal–Wallis test between independent variable (family type) and entrepreneurship development (dependent variable) in selected districts of west Bengal

Entrepreneurial Features	Family type-wise mean rank	
	Nuclear (99)	Joint (21)
Enterprise diversification	60.2	61.93
Profit reinvestment	59.74	64.07
Degree of satisfaction	61.38	56.36
Plan to start a new enterprise	59.64	64.57
Opinion leadership	60.68	59.64
Test statistics[a,b]		

	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	0.057	0.342	0.486	0.481	0.032
df	1	1	1	1	1
Asymp. significance	0.811	0.559	0.486	0.488	0.858

[a]Kruskal–Wallis test. [b]Grouping variable: Family type

Table 5: Kruskal–Wallis test between independent variable (family size) and entrepreneurship development (dependent variable) in selected districts of west Bengal

Entrepreneurial Features	Family size-wise mean Rank	
	Small (99)	Medium (22)
Enterprise diversification	59.28	65.95
Profit reinvestment	60.06	62.45
Degree of satisfaction	61.66	55.32
Plan to start a new enterprise	60.49	60.55
Opinion leadership	60.57	60.18
Test statistics[a,b]		

	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	0.883	0.108	0.805	0.000	0.005
df	1	1	1	1	1
Asymp. significance	0.347	0.742	0.370	0.994	0.945

[a]Kruskal–Wallis Test. [b]Grouping variable: Family size

Table 6: Kruskal–Wallis test between independent variable (caste) and entrepreneurship development (dependent variable) in selected districts of west Bengal

Entrepreneurial Features	Caste wise mean Rank		
	GEN (34)	SC (79)	OBC-A (7)
Enterprise diversification	65.79	58.60	56.21
Profit reinvestment	44.47	69.51	36.64
Degree of satisfaction	59.97	61.60	50.64
Plan to start new enterprise	66.00	58.03	61.71
Opinion leadership	55.75	61.71	69.93

Test statistics[a,b]					
	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	1.505	20.135	0.874	1.736	2.586
df	2	2	2	2	2
Asymp. significance	0.471	0.000**	0.646	0.420	0.274

[a]Kruskal–Wallis test: [b]Grouping variable: Caste

Table 7: Kruskal–Wallis test between independent variable (gross family income) and entrepreneurship development (dependent variable) in selected districts of west Bengal

Entrepreneurial Features	Gross family income mean RANK		
	Rs. 2001–5000 (6)	Rs. 5001–10000 (26)	Above Rs. 10000 (88)
Enterprise diversification	60.50	60.50	60.50
Profit reinvestment	28.50	35.08	70.19
Degree of satisfaction	73.50	58.88	60.09
Plan to start a new enterprise	76.00	66.00	57.82
Opinion leadership	61.58	50.90	63.26

	Enterprise diversification	Profit reinvestment	Degree of satisfaction	Plan to start NETP	Opinion leadership
Chi-square	0.000	32.845	1.220	3.262	5.279
df	2	2	2	2	2
Asymp. Significance	1.000	0.000**	0.543	0.196	0.071

[a]Kruskal–Wallis test. [b]Grouping variable: Gross family income

Table 8: Correlation coefficient analysis between selected independent variables and various component of empowerment of stakeholders as dependent variables in selected district of west Bengal

Control variables	Enterprise diversification	Profit re-investment	Degree of satisfaction	Plan to start new enterprise	Opinion leader-ship
Pet birds holding, Communication used, attitude in pet bird rearing, knowledge in pet bird rearing, and adoption index in improved pet bird rearing					
Enterprise diversification					
r	1.000	−0.064	0.030	0.084	0.234
p	0.000	0.498	0.748	0.370	0.012
Profit re-investment					
r	−0.064	1.000	−0.024	−0.232	0.023
p	0.498	0.000	0.799	0.013	0.810
Degree of satisfaction					
r	0.030	0.024	1.000	−0.056	0.143
p	0.748	0.799	0.000	0.551	0.127
Plan to start a new enterprise					
R	0.084	−0.232	−0.056	1.000	0.044
p	0.370	0.013	0.551	0.000	0.637
Opinion leadership					
r	0.234	0.023	0.143	0.044	1.000
p	0.012	0.810	0.127	0.637	0.000

Correlation (r): Significance 2 tailed (p)

entrepreneurial development in ornamental bird husbandry was investigated using the Kruskal–Wallis test. The findings revealed little variation between small, medium, and big families. While small families scored higher on contentment, planning new businesses, and opinion leadership, medium-sized families scored higher on profit reinvestment and diversity. Statistical analysis, however, showed that these differences were not significant because every p-value was more than 0.05. This suggests that the growth of entrepreneurship is not much impacted by family size. Overall, respondents' engagement, decision-making, and entrepreneurial activities were unaffected by their family size—small, medium, or big.

The findings of table 6 explored the impact of caste on the growth of entrepreneurship in ornamental bird husbandry was investigated using the Kruskal–Wallis test. In terms of diversification and business strategy, respondents from the general caste received the greatest scores. Profit reinvestment and satisfaction levels were highest among responders from SC. OBC-A respondents had the strongest opinion leadership. Only profit reinvestment was shown to be statistically significant at $P < 0.01$, with SC respondents exhibiting a higher desire to reinvest, followed by the General and OBC-A groups. Since their *P*-values were higher than 0.05, other elements of entrepreneurial development were not significant. In general, among ornamental bird rearers, caste influences reinvestment behavior but has no effect on other entrepreneurial enterprises.

The analysis of table 7 revealed that, respondents earning more than Rs. 10,000 per month showed a highly significant interest in profit reinvestment. This indicates that higher income groups have greater capacity and willingness to reinvest their earnings in ornamental bird rearing. Other parameters of entrepreneurship development did not show significant differences, as their p-values exceeded 0.05. Overall, income level influences the ability to reinvest profits, while it has a limited effect on other aspects of entrepreneurial activities among rural ornamental bird rearers.

The correlation analysis of table 8 revealed that enterprise diversification was positively linked with opinion leadership, indicating that those who diversified their bird-rearing activities tended to be more influential in the community. Profit reinvestment showed a negative relationship with plans to start new enterprises, suggesting that reinvesting in existing ventures reduces the tendency to initiate new ones. Degree of satisfaction and plans for new enterprises did not show significant links with other variables. Overall, diversification enhances social influence while reinvestment acts as a stabilizing strategy in ornamental bird rearing.

Table 9: Constrains perceived by the respondents of ornamental bird owners along with ranking in selected districts of West Bengal

S. No.	Constraints	Score	Rank
1	Lack of inputs and resources	95	IV
2	High cost of inputs and medicines	27	V
3	Lack of remunerative price of pet birds	26	VI
4	Prevalence of disease as epidemic	0	VIII
5	Lack of organized marketing system	99	II
6	Non availability of expert advices	96	III
7	Lack of proper technical information	106	I
8	Lack of awareness as poor HRD facility	9	VII

The study of table 9 identified eight major constraints faced by ornamental bird owners across the four districts in the state of West Bengal. The most serious problems were lack of technical information, poor marketing systems, and the absence of expert advice, which limits proper management and growth. Shortage of inputs, high cost of feed and medicines and low selling prices also reduced profitability. Limited training and awareness further restricted knowledge of scientific ornamental bird rearing. Disease outbreaks were not seen as a major issue during the study period. Addressing these key constraints through technical guidance, market organization, and capacity-building can ensure sustainable development and empowerment of ornamental bird rearers in the future, which supports with similar findings of Saikia *et al*., 2023.

CONCLUSION

According to the study, raising ornamental birds in West Bengal offers a lot of potential for rural empowerment. The majority of participants were married, in their middle years, and from nuclear households. The business encouraged entrepreneurship and increased household income. While reinvestment stabilized ongoing

businesses, diversification increased societal influence. Results were influenced by caste, age, income, and education of the stakeholders. Lack of technical expertise, inadequate marketing and insufficient expert assistance were the main obstacles. Ornamental bird rearing and breeding can become a sustainable source of income and rural development by improving market access, training, and extension services in the functional area.

AUTHORS CONTRIBUTION

Dr. Arunasish Goswami and Dr. Sukanta Biswas provided overall guidance and academic supervision. S. Dutta assisted in statistical analysis and data tabulation. Rahul dev Mukherjee supported field activities through data collection. The primary author conducted the research work and prepared the manuscript.

CONFLICT OF INTEREST

The authors declare that no conflict of interest exists and that no private or government organization or funding agency influenced or supported any part of this research work.

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