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Attitudes of Tribal Dairy Farmers Towards Dairy Entrepreneurship in Balrampur District of Chhattisgarh: A Principal Component Analysis

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ABSTRACT

Dairy farming is not an essential part of farming but also the most appropriate productive system, with enormous potential for improving the socio-economic status of large proportions of farmers in tribal areas. The study was conducted during 2018-19 to assess the attitudes of tribal dairy farmers towards dairy entrepreneurship in Balrampur district of northern hill region, Chhattisgarh through the principal component analysis. The results (BTS = 253.977 and the point of significance in P=0.00) showed that the data are appropriate for the Principal component analysis. KMO's sample adequacy calculation result was 0.594, indicating that there were enough indications in each element for study. Factor analysis for attitudes of tribal dairy farmers towards dairy entrepreneurship identifying operational factors have put up an intrinsic relational conglomeration of the items to ultimately form a homogenous 13 attitudes items, and these items were conglomerated into 4 factors as attitudes towards; feeding management, scientific management, socio – economically and scientific production respectively.

Keywords: Attitudes, Dairy entrepreneurship, Principal component analysis, Socio-economics, Tribal dairy farmers

INTRODUCTION

Dairy sectors, in particular for the small and marginal farmers, are important for the rural economy. Not only does this add to the income of poor farmers but also serve as their best insurance against any natural disaster. It is generally accepted that from 132 million tons in 2013, the Indian dairy industry has a bright future with demand likely to reach 200 million tons by 2022 (Anonymous, 2014). Any Indian village has an alluring appearance as a source of additional income in any household of 1-2 milk animals or a few small stocks such as goats or poultry. In India, a large majority of milk producers have one or two milk animals and account for about 70 percent of milk production (Thankachan and Joseph, 2019). Often, one or two milk animals allow farmers to generate sufficient additional income to break the vicious agricultural debt situation (Thankachan and Joseph, 2019). In the present era, however, the livestock industry is anticipated to be in favor of poor and vibrant poverty reduction in the majority of rural people (Birthal and Taneja, 2006). The livestock sector accounted for 3.92 per cent of domestic GDP (NDDB, 2014) between 2011 and 2012. The livestock sector contributed 8.4 percent at consistent (2004-05) prices to the Net Domestic Product (GADVASU, 2014) in 2010-11.

One tangible way in which current entrepreneurship research can contribute to this objective is to develop effective tools for use in professional guidance and in career consulting (Almeida *et al*., 2014; Santos *et al.*, 2014). People who are more familiar with the market

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are believed to be more likely to engage in entrepreneurial activities and thus to be more interested in them. Also, earlier proof has shown that an attitude to business is correlated theoretically and empirically (Santos *et al*., 2014; Spagnoli *et al*., 2016). Attitude is generally believed to be an important determinant of acceptance or rejection. The entrepreneurial skills of dairy farmers are important for their upliftment (Gupta *et al.,* 2013). Many researchers have reported a significant correlation between the attitude towards dairy farming and the adoption of improved dairy cattle management practices (Meena *et al*., 2013 and Prokopy *et al*., 2008). Similarly, Sharma and Singh (2010) reported that the attitude towards recommended practices in buffalo husbandry had a significant and positive relationship with feeding and health care adoption. In turn, the attitude towards scientific dairy farming has to do with a variety of psychological, social, and cultural factors. Given the critical significance of dairy agriculture in the tribal region, improving the attitude of tribal dairy farmers towards dairy farming is necessary and is one way to improve the ability of rural tribal people to produce milk. This present study was therefore carried out to study the Principal Component Analysis of attitudes of tribal dairy farmers towards dairy entrepreneurship in the study area.

METHODOLOGY

The study was conducted in the northern hill region of Chhattisgarh in Balrampur in 2018-19. The Ray and Mondal (2011) methodology was followed with the necessary modifications, in line with the context and purpose of this study. Out of six blocks in the district of Balrampur, namely; Ramchanderpur and Balrampur, were purposely chosen. Based on the maximum availability of dairy farmers, 2 villages in each block were selected. The villages, Keoli, Gamhariya, from the block Ramchaderpur and Manikpur, Kotarki from the block Balrampur were selected for study in this way. A list was prepared of farm families engaged in Dairy farming. Thirty farm families were selected randomly from each village from the list. As a result, a total of 120 farm families were chosen as respondents. The data collection was taken through a personal interview, using a pre-tested structured schedule. The scale of Gupta and Sohal (1976), was used to measure the attitudes of the dairy farmers towards dairy Entrepreneurship. The scale consisted of thirteen factual statements. Data were analysed and calculated through the use of statistic tool viz. Mean, Standard Deviation, and Principal Component Analysis with the help of Statistical Package for the Social Sciences (version 16.0).

RESULT AND DISCUSSION

The findings of the study as well as relevant discussion have been summarised under the following subheading–

Principal component analysis

Pprincipal component analysis was used for grouping variables that are highly correlated into principal components, thus simplifying the analysis as suggested by Leech *et al.* (2005). Table 1 outlines the concise statistical analysis as the mean and standard deviation of the thirteen statements of attitudes of tribal dairy farmers towards dairy entrepreneurship in the study area.

The suitability test 'Barlett Sphericity' (BTS) and Kaiser-Meyer-Olkin (KMO) were performed accordingly to ensure the use of the principal component analysis (Table 2). The results (BTS1.78503 and the point of significance in P=0.00) showed that the data are appropriate for the Principal component analysis. KMO's sample adequacy calculation results were 0.594 indicating that there were enough things in each element. These assessments endorse the appropriateness of the study of the principal component.

It was graphically represented in Figure 1, which shows that the attitude of tribal dairy farmers towards dairy entrepreneurship only four components Eigenvalue was more than one among all component which truly represented the relationship between the statements of factorial component because an eigenvalue number is telling how much variance is there in the data on that direction**.** Table 3 presents the factor analysis to classify operational factors that shaped a homogeneous group of variables called factors through an intrinsic relational conglomeration of variables. Thirteen statements of attitudes of tribal dairy farmers towards dairy entrepreneurship were found to combine into four factors.

Table 1: Descriptive Statistics of attitudes of tribal dairy farmers towards dairy entrepreneurship

S.No.	Statements	Mean	S.D.
1.	Crossbred cows are not better than indigenous one.	2.700	0.681
2.	Crossbred animals are more milk yielder than the indigenous animals	2.575	0.545
3.	Through scientific feeding milk production of dairy animals is increased.	2.775	0.572
4.	Feeding mineral mixture to dairy animals is not necessary	2.867	0.466
5.	Milch animals don't need green fodder to their fill	2.725	0.635
6.	Vaccination against contagious diseases (FMD and HS) in milch animals is a waste of resources	2.750	0.569
7.	Subsidy on veterinary medicines should be given to promote dairying among the poor	2.342	0.542
8.	Treatment of sick animals by veterinary doctor is a wise step	2.833	0.491
9.	Naval cutting, weaning and dehorning are socially not accepted	2.350	0.603
10.	Scientific dairy farming is less profitable than the crop husbandry	2.208	0.647
11.	Adoption of improved dairy farming practices has increased the milk production considerably	2.842	0.410
12.	Improved dairy farming will help small and marginal farmers to overcome poverty	2.867	0.387
13.	Scientific way of dairy farming has contributed to economic development of farmers	2.800	0.478

Table 2: KMO and Bartlett's Test for Attitudes of Tribal Dairy Farmers towards Dairy Entrepreneurship

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)		0.594
Bartlett's Test ofSphericity	Approx. Chi-Square	253.977
	d.f.	**78**
	Sig.	**.000**

Table 3 shows one component greater than one with Eigen value. Only factors that have Eigen values greater than one should be retained following the rules of the principal component analysis. The first factor has an Eigen value of 2.578, a percentage of variance was 19.831. The component included four items i.e., milch animals don't need green fodder to their fill (a5) 0.803, feeding mineral mixture to dairy animals is not necessary (a4) 0.683, vaccination against contagious diseases (fmd and hs) in milch animals is waste of resources (a6) 0.617 and crossbred cows are not better than indigenous one. (a1) 0.403. The factor one was labeled as "Attitudes towards Feeding management"

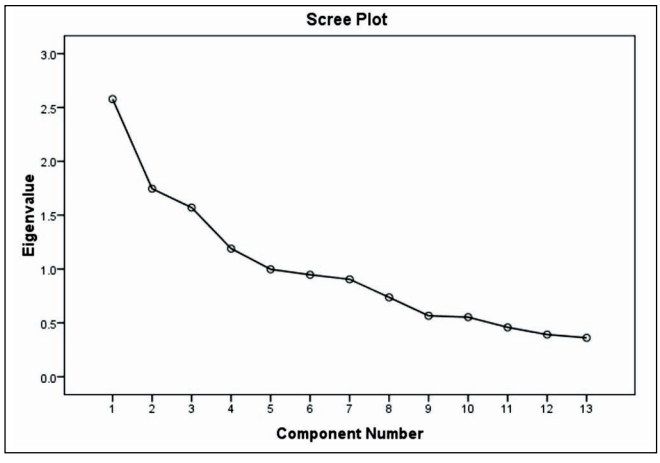

Figure 1: Eigen value of Attitudes of Tribal Dairy Farmers towards Dairy Entrepreneurship

The Second Factor had Eigen value of 1.746 and the percentage of variance was 13.429. The component included the two items i.e., treatment of sick animals by veterinary doctor is a wise step (A8) 0.77 and through scientific feeding milk production of dairy animals is increased. (A3) 0.732. The Factor second was labeled as "Attitudes towards Scientific Management"

The third Factor had Eigen value of 1.571 and percentage of variance was 12.081. The component included four items i.e. naval cutting, weaning and dehorning are socially not accepted (A9) 0.699, scientific dairy farming is less profitable than the crop husbandry (A10) 0.674, crossbred animals are more milk yielder than the indigenous animals (A2) 0.651 and subsidy on veterinary medicines should be given to promote dairying

Table 3: Principal component factor analysis (varimax rotation), factor loading and communalities for attitudes of tribal dairy farmers towards dairy entrepreneurship

Rotated Component Matrix(a)					
Items	**Factor**				**Commu-**
	1	**2**	**3**	**4**	**nalities**
Milch animals don't need green fodder to their feeding (A5)	0.803				0.66
Feeding mineral mixture to dairy animals is not necessary (A4)	0.683				0.51
Vaccination against contagious diseases (FMD and HS) in milch animals is a waste of resources (A6)	0.617				0.57
Crossbreed cows are not better than indigenous ones. (A1)	0.403				0.43
Treatment of sick animals by veterinary doctor is a wise step (A8)		0.77			0.64
Through scientific feeding milk production of dairy animals is increased. (A3)		0.732			0.58
Naval cutting, weaning and dehorning are socially not accepted (A9)			0.699		0.61
Scientific dairy farming is less profitable than the crop husbandry (A10)			0.674		0.53
Crossbred animals are more milk yielder than the indigenous animals (A2)			0.651		0.66
Subsidy on veterinary medicines should be given to promote dairying among the poor (A7)			0.508		0.47
Improved dairy farming will help small and marginal farmers to overcome poverty (A12)				0.652	0.46
Scientific way of dairy farming has contributed to economic development of farmers (A13)				0.638	0.42
Adoption of improved dairy farming practices has increased the milk production considerably (A11)				0.491	0.55
Eigen values	2.578	1.746	1.571	1.19	
Percentage of variance	19.831	13.429	12.081	9.152	
Percentage of Cumulative	19.831	33.26	45.341	54.493	

among the poor (A7) 0.508. The Factor third was labeled as "attitudes towards Socio – Economically". The fourth Factor had Eigen value of 1.19 and the percentage of variance was 9.152. The component included three attitudes items i.e. improved dairy farming will help small and marginal farmers to overcome poverty (a12) (0.761), i like to plan for my dairy enterprise 0.652, scientific way of dairy farming has contributed to the economic development of farmers (a13) 0.638 and adoption of improved dairy farming practices have increased the milk production considerably (a11) 0.491. The factor fourth was labeled as **"**attitude towards scientific production''

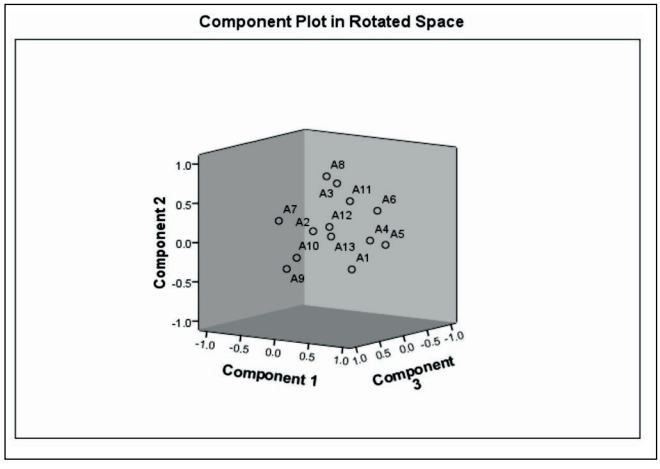

Figure 2: Component plot of Attitudes of Tribal Dairy Farmers towards Dairy Entrepreneurship

It is depicted graphically in Figure 2. that the components plot in space rotated present a clearer presentation in which both the position of data concerning the factorial component and the relationship between data provided by the thirteen statements of attitudes of tribal dairy farmers towards dairy entrepreneurship.

CONCLUSION

The study was concluded that factor analysis for attitudes of tribal dairy farmers towards dairy

entrepreneurship identified four operational factors as attitudes towards Feeding management, Attitudes towards Scientific Management, attitudes towards Socio – Economically and Attitude towards Scientific Production respectively. Attitude is an important determinant of whether Dairy Entrepreneurship is accepted or rejected. But farmers' attitude towards scientific dairy practices is not so favorable. The extension staff should take note of that and use motivational strategies when working with the state's dairy farmers. Efforts to bring about positive changes in attitudes should include knowledge enhancement as a tactic, as both are favorably related. Specialized target-specific activities are necessary to protect poorly educated, scheduled tribe and those with limited land holdings. Mass media can play an important role in inducing desirable attitudinal reinforcements but will not be sufficient if used alone to induce change. Further studies are suggested for a more profound understanding of attitude formation and change.

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