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Impact of productivity factors on profitability of small scale dairy enterprises

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ABSTRACT

This study is a cross sectional survey carried out by means of a structured questionnaire covering 501 dairy entrepreneurs of North Malabar region of Kerala. The information gathered included, land holding, capital invested in dairy enterprise, number of dairy animals, total milk production per day. The data were subjected to statistical analysis to establish the extent to which each productivity factors like land holding, capital invested and number of dairy animals affected milk production and earnings of dairy farmers. The results shows that the mean and standard deviation of number of dairy animals owned is 2.44± .766 and the average milk production per day per animal shows 5.49±.758 kgs/day. The correlation between number of dairy animals and quantity of milk produced per day is .757 The correlation between profit generated from dairy enterprise and land holding is .033 with a weak positive relationship between the two variables. The correlation between profit generated from dairy enterprise and earning through sales of milk is .466 and it is concluded that there is positive relationship between the two variables . Significant relationship between land holding and capital invested in dairy enterprise with a strength of .024 was also observed in this study.

***Key words**: **Capital investment, Correlation, Dairy Land, Malabar**.*

I. INTRODUCTION

1 The Indian dairy sector owes its success to millions of small holder producers, who have one or two milch animals yielding between 3-7 litres of milk per day. Although the yield has remained quite low compared to the world standard yet it has not only survived but flourished. However the small holder livestock farms are an integral part of Indian agriculture (Devendra. 2007) The structure of milk production is largely based on low input and low to moderate output which fits into the resource endowments of small producers in terms of ownership of land, with more than 75% of the farmers keep 2-3 milch animals for subsistence of their livelihoods (Singh and Datta. 2010) India ranks first in milk production, accounting for 18.5 % of world milk production, achieving an annual output of 146.3 million tones during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 %. (The Economic Survey 2015-16) The distribution patterns of income and employment show that small farm households hold more opportunities in livestock production. The growth in livestock sector is demand-driven, inclusive and pro-poor. Incidence of rural poverty is less in states like Punjab, Haryana, Jammu & Kashmir, Himachal Pradesh, Kerala, Gujarat, and Rajasthan where livestock accounts for a sizeable share of agricultural income as well as employment. Empirical evidence from

India as well as from many other developing countries suggests that livestock development has been an important route for the poor households to escape poverty. Dairy development programmes mainly benefit the weaker sections of society. Most of the cultivating households, irrespective of the size of their land holdings, own some milch animals or the other. (Singh,S.R. and Datta,K.K.2010). With the crop sector experiencing high degree of risk and uncertainty due to the vagaries of nature, livestock component offers a strong potential for a more stable and continuous employment and income to the rural poor, enabling them to overcome their difficulties relating to income-generation.

1.1 Integration of livestock component with the crop sector is understood to have the ability to mitigate the problems of monsoon failures by making the mutual advantages of the integration feasible through forward and backward linkages. In this context, this study has been conducted to optimize the farm plans for different farming systems, so as to reap maximum harvest from farming. (Hanson, G. D., Cunningham, L. C., Morehart, M. J., & Parsons, R. L. (1998).

1.2 Productivity growth is a key mechanism by which agricultural industries remain competitive and farmers maintain profitability. Productivity growth reflects improvements in the efficiency with which farmers combine market inputs (land, labour, capital, materials and services) to produce outputs (such as crops, livestock and wool). As a result of higher productivity, Australian farmers have increased output using relatively fewer inputs, producing almost three times more output than would have been the case had there been no productivity growth over the past 50 years. Profitability is generally a farmer's main objective, rather than higher productivity. However, in the long run, productivity growth is the key mechanism by which farmers maintain profits. With some important profit drivers largely beyond farmers' control, such as seasonal conditions and market prices, farmers' choice of enterprise and use of farm inputs largely determine profitability. (Ghayur, 1987).

II.MATERIALS AND METHODS

The study was conducted among randomly selected 500 dairy farmers to determine the relationship between earning through sale of milk with the quantity of milk produced per day in small holders livestock production system and the study was undertaken from May 2014 to June 2016 with a pre-tested structured questionnaire having a reliability score of .890 with Cronbach's Alpha. The questionnaire was designed to gain insight regarding the productivity factors i.e land,capital,human resource,infrastructure and technology adopted by dairy farmers influencing profitability of small holders livestock production system in the North Malabar Region consisting of Kasargode, Kannur, Kozhikode and Wayanad. The study was conducted, within North Malabar Region of Kerala state . The data were analysed by the application of statistical tools like correlation, and crosstabs. 125 samples was be selected by simple random sampling from each district and the total sample was 500 samples of dairy farmers representing North Malabar Region of Kerala state.

2.1 Research instrument used A structured questionnaire and personal interview method will be used for collecting primary data from the dairy farmers.

2.2 Scaling technique used Likert 5 point scale technique for quantifying the various qualitative aspects of study will be used (Bapai,N.2015).

2.3 Tools of analysis For the measurement and analysis of the information gathered, appropriate statistical tools will be used with SPSS software for establishing conclusions, along with simple statistical tools such as percentage mean and correlation analysis.

TABLE NO: 1

ESTIMATED NUMBER OF PRODUCTIVE MILCH CATTLE (CROSSBRED) IN NORTH MALABAR DISTRICTS OF KERALA

Sr no	District	Summer	Rainy	Winter	Overall
1	Kozhikode	38500	39000	37100	38200
2	Kannur	55000	56500	55000	55500
3	Wayanad	38900	38300	32900	36700
4	Kasaragod	26800	23100	19100	23000

Source: secondary data Animal husbandry profile 2013:.Government of Kerala

2.4 Research gap: This study will be able to identify various productivity factors of small scale dairy enterprise of Kerala state and the relation between them. The factors like land holding, capital invested, number of dairy animals. influencing the milk production, thereby improving earning and income from dairy enterprise by dairy farmers with reference to the dairy farmers of north Malabar region of Kerala state.

III. RESULTS AND DISCUSSION

TABLE NO:3

CROSS TABULATION BETWEEN AGE OF DAIRY ENTREPRENEUR AND NUMBER OF ANIMALS OWNED

		NUMBER OF DAIRY ANIMALS				Total
		1 ANIMAL	2 TO 3	3 TO 5	6 TO 10	
AGE	20-30	0	6	0	0	6
	31-40	0	36	0	0	36

	41-50	7	54	3	2	66
	51-60	0	96	49	74	219
	ABOVE 60	0	150	22	2	174
Total		7	342	74	78	501

Source: Primary data

Results: It is apparent from the table 3 that majority of dairy entrepreneurs (n= 150) were in the age group of above 60 years of age having 2 to 3 dairy animals and maximum 6 to 10 animals is possessed by 74 respondents in between the age group of 51 to 60 years. The study also shows that maximum n=342 respondents were having 2 to 3 animals, however people below the age group 20 -30 were not showing much interest in dairy enterprises its also not yet clear that small scale dairy farming progressively increases with age with only 2 to 3 animals however there is significantly deceeases with 6 to 10 dairy animals

TABLE NO 4:

EDUCATION LEVEL OF DAIRY ENTREPREUNERS

	Observed N	Expected N	Residual
PRIMERY LEVEL	145	167.0	-22.0
BELOW 10 TH STD	52	167.0	-115.0
BELOW 12 TH STANDARD	304	167.0	137.0
Total	501		

Source: primary data

3.1 To determine the effect of number of dairy animals on quantity of milk produced the testing of the below stated hypothesis was undertaken with correlation analysis

$H_{0\ 1}$: There is no statistically significant relationship between number of dairy animals and quantity of milk produced per day

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TABLE NO 5

DESCRIPTIVE STATISTICS OF NUMBER OF DAIRY ANIMALS AND QUANTITY OF MILK PRODUCED PER DAY

	Mean	Std. Deviation	N
NUMBER OF DAIRY ANIMALS	2.4451	.76647	501
QUANTITY OF MILK PRODUCED PER DAY	5.3952	.75862	501

Source: primary data

Table no 5 shows the mean and standard deviation of number of dairy animals owned is 2.44± .766 and the average milk production per day per animal shows 5.49±.758 kgs/day the results obtained from the preliminary analysis is found to agree with secondary data

TABLE NO: 6

CORRELATION ANALYSIS BETWEEN NUMBER OF DAIRY ANIMALS AND QUANTITY OF MILK PRODUCED PER DAY

		NUMBER OF DAIRY ANIMALS	QUANTITY OF MILK PRODUCED PER DAY
NUMBER OF DAIRY ANIMALS	Pearson Correlation	1	.757**
	Sig. (2-tailed)		.000
	N	501	501

Source: primary data

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation table 6 indicates that the correlation between number of dairy animals and quantity of milk produced per day is .757 with a corresponding *p* value of .000 based on 501 participants. since the p value of .000 is less than.05 the null hypothesis is rejected stating that there is no statistically significant relationship between

number of dairy animals and quantity of milk produced per day and it is concluded that there is a strong positive relationship between the two variables with evidence for not rejecting the alternative hypothesis

3.2 To determine the effect of land holding on profit genereated from dairy enterprises the below illustrated hypothesis was statistically analysed with estimation of correlation

$H_{0\ 2}$: There is no statistically significant relationship between profit generated from dairy enterprise and land holding

TABLE NO 7

CORRELATION ANALYSIS BETWEEN LAND HOLDING AND PROFIT GENERATED FROM DAIRY ENTERPRISES

		LAND HOLDING	Profit generated from dairy enterprise
LAND HOLDING	Pearson Correlation	1	.033
	Sig. (2-tailed)		.455
	N	501	501

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

Correlation table indicates that the correlation between profit generated from dairy enterprise and land holding is .033 with a corresponding *p* value of .455 based on 501 participants. since the p value of .455 is higher than.05 the null hypothesis is not rejected and it is concluded that there is a weak positive relationship between the two variables

3.3 To determine the relationship between two productivity factors namely land holding and capital invested in dairy enterprise the following hypothesis was tested statistically by using chi square test and a cross tabulation among the variables was also undertaken

$H_{0\ 3}$: There is no statistically significant relationship between land holding and capital invested in dairy enterprise.

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TABLE NO:8

CROSS TABULATION BETWEEN LAND HOLDING AND CAPITAL INVESTED IN DAIRY ENTERPRISE

		CAPITAL INVESTED IN DAIRY ENTERPRISE			Total
		31000-50000	51000-100000	1 LAKH TO 5 LAKH	
LAND HOLDING	NIL	13	85	4	102
	BELOW 10 CENTS	44	129	54	227
	11 CENTS TO 50 CENTS	5	1	53	59
	51 CENTS -100 CENTS	2	68	43	113
Total		64	283	154	501

Source: primary data

Results: It is apparent from the table 8 that majority of dairy entrepreuners n= 214 (129+85) were having less than 10 cents of land holding moreover maximum investment in between 1 to 5 lakh rupees is also made by this group. From the data it is quite revealing that n=283 respondents have invested 51000- to 1 lakhs in their dairy enterprise with n=154 respondents investing one to five lakh rupees.as can be seen from the table that significant number of respondents were small land holders.

IV. CONCLUSION

This study will be able to throw light on why some dairy entrepreneurs were able to make profit while majority of dairy farmers are struggling. Questionnaire schedules was framed to extract information from small scale dairy entrepreneurs from four district constituting the North Malabar region of Kerala state namely Kannur, Kasargode, Kozhikode and Wayand regarding the various productivity factors effecting farm enterprise in influencing there profitability. The questionnaire was designed with Nominal, Ordinal, Interval and Ration scale, the analysis was to measure with statistical software to understand the relationship between various productivity factors. This objective of this study will be achieved from data obtained from 500 sample unit consisting of dairy entrepreneurs. which will be selected through random sampling with 125 samples selected from each district of north Malabar region of Kerala State from the population consisting of dairy farmers.

Milk is an important component of diets for all humans as it is high in essential amino acids that are most likely to be deficient in diets based on vegetable protein. Although milk is a high-cost source of protein and fat relative to vegetable sources, it is readily saleable particularly in the more affluent urban areas of developing countries. Improving milk production is therefore an important tool for improving the quality of life particularly for rural people in developing countries (Bedi,M.S.2010) .

Additionally immense changes has taken place in preservation, transportation and marketing of milk and its products. The change in this sector started to appear since last 2 to 3 decades following introduction of newer technology particularly in the field of animal breeding by up gradation of native small yielders to high yielding crossbreds of superior adaptability to our extreme humid and hot climatic condition, acclimatizing well to moderate Management practices of our semi skilled dairy farmers..

The cross breed animals require higher level of Management practice .As there is fear of getting various diseases and the animal falling sick, primarily because of negligence and partly due to ignorance from the farmers side, thus this conditions invariably imparts immense strain and economic liability to the dairy farming community especially to those people whose skills and abilities are compromised, eventually imparting to huge loss in the form of productivity loss and medicine cost, finally succumbing to more hardship. This study is envisaged to understand impact of illness to animal health and its effect on

. It is also seen nowadays the employing laboures from other states at a cheaper rate however their regularity is unpredictable and working skill is poor, creating more difficulty in running farms on their sole support. Based on all these challenges the common practice which is commonly seen is family operated small dairy enterprise with fewer animals.

This study envisages for understanding and analysing various determinants of dairy enterprise which impart its influence in varying degree and depth to the profitability of dairy enterprise. Unlike major enterprises, dairy enterprise has limited influence of various productivity factors like capital. The capital invested in dairy enterprise is comparatively less in Kerala, as majority of dairy enterprise are small scale and unorganized, however there is immense scope for large scale organised dairy farms as seen in developed and in western countries. This study gathers information to understand the influence of capital in efficient and effective productivity and it impact on profitability.

Materials in dairy enterprise essentially consists of high yielding cattle to convert human unusable waste like feed ,fooder and grass to valuable protein rich milk for human consumption . Local availability of feed, fodder and greens at a cheaper rate will be able to bring the cost of production thereby increasing profitability of dairy enterprise. Availability of sufficient water even during summer is essential in operating a dairy enterprise, it should have round the clock electricity to operate milking machine and other equipments (Barooah,B.B.,& Goswami,P.R.1995). The method of feeding, impact of feeding method to productivity will be evaluated ,based on gathering information from dairy farmers.

Land is a critical determinants as it is required for setting the infrastructure, even though the requirement is less in small scale dairy farming. However adequate area for fodder cultivation, grazing area and setting farms away from crowded neighborhood has its own advantage (Anjanikumar.,and Gupta,J.N.1997). hence the land availability and land utilization will be studied to get insight of its influence of profitability . As the knowledge level requirement to run a traditional dairy farm and a modernised dairy enterprise has gone through a sea change hence professional expertise and scientific knowledge will be an inevitable asset to the dairy entrepreneur..

4.1 Advantages:

The major objective of this study was to investigate the influence of land holding and capital invested in small scale dairy enterprises to the dairy productivity. Application of statistical tools to investigate the relationship and strength of association between variables were also undertaken through correlation analysis and crosstabs.

4.1.1.The same can be applied in larger farms and the ideal relationship could be determined. for which further studies may be required to create ideal models giving maximum profitability to small scale dairy enterprises run by marginal dairy farmers.

4.2 Limitations

These findings cannot be extrapolated to other regions as topographical societal and environmental condition may vary.and the sample size is also small and the findings might not be transferable to other area or for large dairy enterprises. Further work is required to establish the accurate.

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REFERENCES

[1.] Devendra,C.2007.Small farm system to feed India.*outlook on agriculture*,**36**(1),7-20

[2.] Singh,S.R and Datta,K.K.2010.Understanding value addition in Indian dairy sector: some perspective. *Agriculture economics research review*, **23** (2010)

[3.] Hanson, G. D., Cunningham, L. C., Morehart, M. J., & Parsons, R. L. (1998). Profitability of moderate intensive grazing of dairy cows in the Northeast.*Journal ofdairy science*, *81*(3), 821-829**.**

[4.] Ghayur, S. (1987) Rural Barani areas: Present state of employment & prospects – Results from a field survey of seven villages. Journal of Rural Development & Administration, 19 (1): 36-53

[5.] Bapai,N.2015 Business research methods,9 th edi. Pearson India education pvt ltd.,India762p

[6.] Bedi,M.S.2010.*Dairy development marketing and economics growth*, New Delhi,Deep and deep publication 2010,p 8.

[7.] Barooah,B.B.,& Goswami,P.R.(1995). "Resource Use Efficiency & Output Performance of DairyLoan Beneficiary & Non-beneficiary Farmers Under Integrated Rural Development Programme in Jorhat District of Assam," *Indian Journal of Agricultural Economics*, Vol. 50, No. 3, 1995, pp. 349-350

[8.] Anjanikumar.,and Gupta,J.N.(1997).Impact of crossbreeding technology of cattle :"Bihar approach".*Agricultural situation in India*,vol LIV,NO.6,1997,PP375-380

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