

Study the Management Patterns of Urban Dairy Farms around Karachi City

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Abstract: In order to investigate the management patterns and economic efficiencies of urban dairy farms, the dairy farms established in the urban areas of Karachi were studied during the year 2008. The sample comprised of 25, 15 and 11 small, medium and large size farms with average herd size of 27, 62 and 143 animals, respectively. The results indicated that the average per farm opening inventory of all assets including animals, value of shed, equipment and other utensils etc. at small, medium and large farms was Rs.2,717,000; 5,892,000 and 12,997,000 while ending inventory Rs.2,913,500; 6,461,500 and 13,635,000/farm, respectively. The gross income generated from all farm sources at small, medium and large size farms were Rs.2,033,568; 4,867,800 and 11,403,696 against the gross expenses of Rs.1,541,550; 3,523,860 and 7,834,905, respectively which resulted net returns of Rs.492,018; 1,343,940, 5,568,791/farm and 18,222.89; 21,676.45; 24,956.58/animal, respectively. On the basis of above gross income and expenses, the input : output ratios at small, medium and large size dairy farms were 1:1.31, 1:1.38 and 1:1.45 averaging 1:1.38; while the cost benefit ratio were 1:1:0.31, 1:0.38 and 1:0.45 averaging 1:0.38. the rates of capital turn over at small, medium and large size dairy farms in the study area were 5.72, 4.60 and 3.73 which suggested that the entrepreneurs of small, medium and large dairy farms would be able to recoup their capital investment within 5.72, 4.60 and 3.73 years, respectively. The Results showed that large size farm operators will recoup their capital well earlier than the medium and small size dairy farm operators.

Keywords: management patterns, economic efficiencies, urban dairy farms.

I. Introduction

Livestock is a renewable natural resource and play a vital rate in the Pakistan economy. Pakistan is fortunate in having abundant livestock resources. It has great potential for development of meat industry to meet the needs of not only expanding local market but also the Middle East and Gulf States. Some of the best tropical breeds of cattle and buffaloes are found in Pakistan. National herd consists of 27.335 million buffaloes, 29.559 million cattle, 53.787 million goats and 26.488 million sheep. The quality and the existing productively level of local livestock is low as compared with those of advanced countries. The per capita availability of meat in Pakistan has improved from 13.7 kg in 1979-80 to 18.2 kg in 2004-05. It is still, however far below the standards of world health organization (WHO, 2007). Dairy farming is one of the best commercial activities if professionally done on small land holdings. The return of the land used for feeding animals is higher as compared to land used for traditional cropping. A cow, on average, yields 74 litres milk a day over a lactation period of 305 days whereas the buffalo, on an average, yields 10 litres a day over a lactation period of 280 days. The lactation period is the period during which the animals provide milk. These animals are called wet animals. Generally the lactation days of cows are 305 days and that of buffaloes is 280 days. For calculation, 77 percent of the total number of cows has been taken as wet cows and 67 percent of the total number of buffaloes as wet buffaloes. Male calves are sold at the end of year and also reared separately for beef production (Pakissan, 2006). Pakistan is the fifth largest milk producer in the world. Milk production is 28 million tons from 125 million heads. Milk is used for drinking, tea, desi ghee, yogurt and butter making. Milk is also used to make khoya and different types of sweets. Dairy development is also linked to nutrition, both among farm families and resource poor consumers of dairy products and also on farm soil nutrients. Consumption of even small amounts of milk can have dramatic effects on improving the nutritional status of poor people and is especially important for children and nursing and expectant mothers. An inequitable development path occurs when increased commercialization at farm and market levels are associated with reduced opportunities and alternatives for small-scale farmers and market agents (Steven *et al.* 2007). Since buffaloes are preferred for

milk production due to the higher fat content of their milk, the buffalo population increased at a faster rate than the cattle population. Consequently growth in milk production increased rapidly, especially after 1980, mainly due to the increased buffalo population but also due to improved milk yields (JUnejo, 2008). Punjab, where irrigation expansion was more widespread, experienced a greater increase in the buffalo population and better milk yield growth. Also, irrigation and higher cereal productivity has allowed an increase in green fodder production for dairy animals, from 1.27 million hectares in 1960 to about 2.2 million hectares today, contributing to higher productivity (Jamal *et al.* 2003). On the above hypothesis, the present study was carried out to study the management patterns and economic efficiencies of urban dairy farms established around Karachi city.

II. Materials and Methods

The survey included an analysis of specifics, by the method of comparison, in order to arrive at some enlightening generalizations and paradigms which are suitable for the solution of specific problems, challenges and issues.

Source of data

The study entails a sample size of 42 dairy farms of different categories. These dairy farms are located at National High way, Bilal Colony and in the Gadap town. By conducting the survey, the area under was explored to know the existence of dairy farms and to investigate their economic efficiency. It was observed that a large number of dairy farms are scattered in the peri urban areas of Karachi. The farms were categorized as small, medium and large dairy farms. The farms with upto 40 buffaloes and cattle were designated as small size farms, having 41-80 buffaloes/cattle were categorized as medium size farms and the dairy farms with buffaloes/cattle strength more than 80 were categorized as the large size farms. In all, a manageable sample size of 43 farms of all categories were surveyed to evaluate their economic efficiencies and management patterns including 23 small size dairy farms, 13 medium size farms and 7 large size dairy farms. The required data were collected on a questionnaire specifically developed for this purpose (annexure-I). The following information was gathered by using questionnaire:

Concentrate:

1	Grain	Quantity/animal (kg)	Rate	Total amount
2	Prepared ration	-do-	-do-	-do-
3	Type of oil seed cake	-do-	-do-	-do-

Dry fodder

	Wheat straw	-do-	-do-	-do-
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Green fodder

		Quantity/animal (kg)	Rate	Total amount
1	Berseem	-do-	-do-	-do-
2	Maize	-do-	-do-	-do-

Sale of

(a)	Young calves	No	Rate	Total Amount
(b)	Cull animals	-do-	-do-	-do-

Economic Efficiency:

In order to judge the economic efficiency of the dairy farms the following parameters were calculated:

1. Net returns

$$NrPu = (Gi) - (Ge)$$

NrPu = denoted net return per unit or farm

Gi = refers gross income per farm

Ge = refers gross expenses per farm

2. Input-output ratios

$$Ior = Gi/Ge$$

Ior = denotes input-output ratio

Gi = stands for gross income

Ge = symbolizes gross expenses

3. Cost : Benefit ratios

$$Cbr = Nr/Ge$$

Nr = reveals net return
 Ge = symbolizes gross farm expenses

On the basis of above formulae, the data in relation to different economic parameters were analysed and presented in the results chapter.

III. Results

The results of the study are presented in this chapter along with and the data is interpreted in view of the economic analysis.

Education level of dairy farmers

The data in Table-1 showed that out of total 51 operators of dairy farms of different categories investigated during the study 45.09 percent were educated up to matric level, 17.64 percent could complete college level studies (intermediate), while 7.84 percent of them were graduates. It can be seen that the literacy rate among the operators of dairy farms in the urban areas of Karachi was high and only one out of 51 farm owners had no education.

Table-1 Education level of owners of dairy farms in the urban areas around Karachi city

Level of education	Small farm operators		Medium size farm operators		Large size farm operators		Total	
	No.	%	No.	%	No.	%	No.	%
Uneducated	1	4.00	0	0.00	0	0.00	1	1.96
Primary	3	12.00	0	0.00	0	0.00	3	5.88
Middle	6	24.00	4	26.66	1	9.09	11	21.56
Matric	12	48.00	5	33.33	6	54.54	23	45.09
Intermediate	3	12.00	4	26.66	2	18.18	9	17.64
Graduation	0	0.00	2	13.33	2	18.18	4	7.84
Total	25	100	15	100	11	100	51	100

Distribution of respondents by age

The results of the survey in relation to age of respondents, Table-2 indicated that 35.29 percent of the dairy farmers in the study area were in the age group of 30-40 years, 31.37 percent were in the age range of 40-50 years, while 33.33 percent of the respondents were above 50 years of age.

Table-2 Distribution of respondents according to their age in the urban areas around Karachi city

Age group (Years)	Small dairy farms		Medium dairy farms		Large dairy farms		Total	
	No.	%	No.	%	No.	%	No.	%
Upto 30	0	0.00	0	0.00	0	0.00	0	0.00
30-40	9	36.00	7	46.66	2	18.18	18	35.29
40-50	7	28.00	5	33.33	4	36.36	16	31.37
Above 50	9	36.00	3	20.00	5	45.45	17	33.33
Total	25	100	15	100	11	100	51	100

Herd size

The farms with farms upto 40 animals were known as small farms, dairy farms with animal's 40-80 animals were designated as medium size farms and farms having animal strength more than 80 animals were categorized as large size farms. The data in Table-3 indicated that at 25 small size farms, the total number

of animals was 675 with an average herd size of 27 animals; while at medium size dairy farms, the total number of animals was 930 with average herd size of 62 animals. However, the total number of animals at the 11 large size dairy farms investigated was 1573 animals with an average herd size of 143 animals.

Stock Inventories

a) Small dairy farms

The data in relation to stock inventories at small size dairy farms, indicated that at the beginning of the year, the total number of animals were 27, which included 26 buffalos and one bull with estimated value of Rs. 1,740,000; while at the end of the year, the number of animals increased to 31, including 30 buffalos and one bull with anticipated value of Rs. 1,880,000 indicating an appreciation of Rs. 140,000.

b) Medium sized dairy farms

The data regarding the stock inventories at medium size dairy farms, located in the urban areas around Karachi city showed that at the beginning of the year, the total number of animals were 62, which included 61 buffalos and one bull with estimated value of Rs. 4,020,000; while at the end of the year, the number of animals increased to 71, including 70 buffalos and one bull with anticipated value of Rs. 4,535,000 indicating an appreciation of Rs. 515,000. On replacement of cull animals with new lactating buffalos and addition of some more animals in the herd, the stock inventories at the end of the year increased considerably along with an appreciation value at the medium size dairy farms in the study area.

c) Large sized dairy farms

The results pertaining to stock inventories at large size dairy farms, situated in the urban areas around Karachi city showed that at the beginning of the year, the total number of animals were 143, which included 133 buffalos, 8 cows and two bulls with estimated value of Rs. 9,780,000; while at the end of the year, the number of animals increased to 153, including 141 buffalos, 10 cows and two bulls with anticipated value of Rs. 10,289,000 indicating an appreciation of Rs. 509,000. Moreover, due to addition of new animals in the herd, a considerable amount as appreciation was anticipated at large size dairy farms.

Watering

The animals were watered once in 24 hours in summer, but at every dairy farm irrespective to consider its category or size, there was a regular arrangement of water; and they had installed electric water pumps for this purpose.

Breeding

At all dairy farms, at least one bull for breeding was available; but at large size farms two bulls were commonly seen. However, artificial insemination was also found in practice, particularly at large size buffalo dairy farms.

Health care

The dairy farmers in the urban areas of Karachi were found to be well aware of general disease outbreaks and other disorders occurred in dairy animals.

Table-3 Vaccination schedule in practice with the dairy farmers in urban areas around Karachi city

S.No.	Name of disease	Time vaccination
1	Anthrax	August
2	Black quarter	March (1 st week)
3	Heamorrhagic septicemia	July (4 th week)
4	Foot and mouth disease	April (1 st week)
5	Rinderpest	September

Economic efficiencies

The capital investment of the entrepreneur in the establishment of dairy farms in urban areas was collected and are presented in Table-4.

Table-4 Average per farm and per animal capital investment on selected dairy farms in urban areas around Karachi city.

Farm size/average No. of animals	Per farm investment		Total ini +inj=x	Average per farm x2=Y	Investment per farm Y/Av.No. of animal/farm
	In the beginning of the year (ini)	In the end of the year (inj)			

Small	2,717,000	2,913,500	5,630,500	2,815,200	104,268.51
Medium	5,892,000	6,461,500	12,353,500	6,176,750	99,625.00
Large	12,997,000	13,635,000	26,632,000	13,316,000	93,118.88
All class mean	21,606,000	23,010,000	44,616,000	22,308,000	99,004.13

Table-5 Capital turnover on dairy farms in urban areas around Karachi city.

Farm size	Herd size	Capital investment (a)		Net return (b)		Capital turnover (a/b)
		Per farm	Per animal	Per farm	Per animal	
Small	27	2,815,200	104,268.51	492,018	18,222.89	5.72
Medium	62	6,176,750	99,625.00	1,343,940	21,676.45	4.60
Large	143	13,316,000	93,118.88	3,568,791	24,956.58	3.73
Mean	-	22,308,000	99,004.13	5,404,749	64,855.92	4.68

IV. Discussion

The results of the present investigation showed that the average per farm opening inventory of all assets including animals, value of shed, equipment and other utensils etc. at small, medium and large farms was Rs.2,717,000; 5,892,000 and 12,997,000 while ending inventory rs.2,913,500; 6,461,500 and 13,635,000/farm, respectively. The gross income generated from all farm sources at small, medium and large size farms were Rs.2,033,568; 4,867,800 and 11,403,696 against the gross expenses of Rs.1,541,550 3,523,860 and 7,834,905, respectively which resulted net returns of Rs.492,018; 1,343,940, 5,568,791/farm and 18,222.89; 21,676.45; 24,956.58/animal, respectively. The above results are fully in agreement with those of Syed (2005) and Lohana (2006), who have reported supporting results when conducted similar studies in Quetta district of Balochistan and Jamshoro district of Sindh province, respectively. Moreover, the results of Jamal *et al.* (2003) and Muzafar and Usmani (2000) also showed partial similarity with slight exception, which was mainly associated with the change of breeds and production patterns according to the ecological factors of these particular areas of Pakistan. In the present study, the rates of capital turn over at small, medium and large size dairy farms existed in urban areas around Karachi city were 5.72, 4.60 and 3.73 which suggested that the entrepreneurs of small, medium and large dairy farms would be able to recoup their capital investment within 5.72, 4.60 and 3.73 years, respectively. The figures showed that large size farm operators will recoup their capital well earlier than the medium and small size dairy farm operators. These results are fully supported by Syed (2005) also reported similar results from his studies in Karachi, who indicated that the entrepreneurs of his area of study were able to recoup their investment within 3.90 years on the small farms, 5.17 years on medium farms and 5.79 years on large farms. The above discussion clearly indicates a concurrence among the results of present investigation and the studies conducted in other parts of the province few years ago. In view of the discussion and findings, the lacking and shortcomings of the dairy business can be identified to further improve the situation.

V. Conclusions

- The large size dairy farms in urban areas around Karachi city were remarkably more efficient as compared to medium size and small size dairy farms.
- The gross expenses per animal for large size farms were lower than the medium size and small size farms.
- The small size farms had highest gross expenses per animal and lowest net returns.
- Large size farm operators will recoup their capital well earlier than the medium and small size dairy farm operators.

VI. Suggestions

- Milk markets in different areas of Karachi city may be established and dairy farmers may be encouraging to sell their farm milk directly without intervention of middlemen. This will not only increase the profit of the dairy farmer, but the public will get milk on relatively lower prices.
- Specialized training in reducing the production cost and increasing the profit may be given to small and medium size farm owners, so that they can increase their profit.
- Hygienic conditions at the dairy farms need special attention of the government and the city government; should conduct time to time inspections of the dairy farms to improve the situation.

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