CHAPTER 4
RESULTS

This dissertation were research study about dairy cooperative's management process contributing to occupation development of dairy farmers in upper northern Thailand which has the objective to study the factors influencing to dairy cooperative's management process contributing occupation development of dairy farmers in upper northern Thailand and the decision to continue doing dairy farming of the farmers then take result to create dairy cooperative management process which suitably and effectively dairy farming occupation development in upper northern Thailand. Data collecting in the research through questionnaire with sample group, focus group discussion and in-depth Interview with who concerning dairy farming extension in upper northern Thailand. The researcher had divided research result into 4 section as following

Section 4.1: Dairy cooperative's management process: Member-level

Section 4.1.1: Personal basic factors, economical factors, social factors and dairy farming operation factors of dairy farmer in Upper Northern Thailand.

Section 4.1.2: Factors influencing to dairy cooperative's management process in considering to representative of dairy farmers in Upper Northern Thailand.

Section 4.2: **Dairy cooperative's management process: Organization-level**

Section 4.2.1: Analysis of status of dairy cooperative and milk factories in Upper Northern Thailand.

Section 4.2.2: Dairy cooperative's management process in considering to representative of dairy farmer who concerning promotion of dairy farming in Upper Northern Thailand.

Section 4.3: Dairy cooperative's management process in Upper Northern Thailand.

Section 4.4: Suggestion for dairy cooperative's management process in Upper Northern Thailand.

Section 4.1: Dairy cooperative's management process: Member - level

Section 4.1.1: Personal basic factors, economical factors, social factors and dairy farming operation factors of dairy farmer in upper northern Thailand

The research applied quantitative research by collected data through applied questionnaire with 2 sample groups of dairy farmers i.e.

1) Farmer who continue doing dairy farming and are member of dairy cooperative total 289 persons

2) Farmer who quit dairy farming and used to be member of dairy cooperative total 45 persons

Analysis result were presented in format of table with explanation as following consecutively

Group 1: Farmer who continue doing dairy farming and are member of dairy cooperative

The researcher collected data from 289 questionnaires that account to 100% of sampling from farmer who continue doing dairy farming in upper northern Thailand

Personal basic factors

1. Gender

Large dairy cooperative: It was found that the most of farmer samples were male which is averaged at 86.50% and were female at 13.50% (Table 4.1)

Medium dairy cooperative: It was found that the most of farmer samples were male which is averaged at 83.30% and were female at 16.70% (Table 4.1)

Small dairy cooperative: It was found that the most of farmer samples were male which is averaged at 87.50% and were female at 12.50% (Table 4.1)

Table 4.1 Gender

Gender	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Female	23	13.50	17	16.70	2	12.50	42	14.50
Male	148	86.50	85	83.30	14	87.50	247	85.50
Total	171	100.00	102	100.00	16	100.00	289	100.00

2. Age

Large dairy cooperative: It was found that the farmer samples age the oldest at 77 years old and youngest at 23 years old with an average at 47.20 years old. The most of farmer samples ages are between 48 -57 years old which is averaged at 44.00%, and the secondary span of age is between 38 – 47 years old which is averaged at 35.70%. There are only few farmers samples whose ages are between 18 – 27 year old and equivalent to or more than 68 years old which is averaged at 2.30%. (Table 4.2)

Medium dairy cooperative: It was found that the farmer samples age the oldest at 67 years old and youngest at 18 years old with an average at 45.49 years old. The most of farmer samples ages are between 38 -47 years old which is averaged at 36.30%, and the secondary span of age is between 48 – 57 years old which is averaged at 35.30%. There are only few farmers sample whose ages is between 18 – 27 year old which is averaged at 5.90%. (Table 4.2)

Small dairy cooperative: It was found that the farmer samples age the oldest at 59 years old and youngest at 30 years old with an average at 45.75 years old. The most of farmer samples ages are between 48 -57 years old which is averaged at 56.20%, and the secondary span of age is between 28 – 37 years old which is averaged at 31.20%. There are only few farmers samples whose ages are between 38 – 47 year old and between 58-67 years old which is averaged at 6.30%. (Table 4.2)

Table 4.2 Age

Age (year)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
18 – 27	4	2.30	6	5.90	-	-	10	3.40
28 – 37	18	10.60	13	12.80	5	31.20	36	12.40
38 – 47	61	35.70	37	36.30	1	6.30	99	34.30
48 – 57	76	44.40	36	35.30	9	56.20	121	41.90
58 – 67	8	4.70	10	9.70	1	6.30	19	6.60
Equivalent to or more than 68	4	2.30	-	-	-	-	4	1.40
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 77 years	Maximum 67 years	Maximum 59 years	Maximum 77 years
Minimum 23 years	Minimum 18 years	Minimum 30 years	Minimum 18 years
Mean 47.20 years	Mean 45.49 years	Mean 45.75 years	Mean 46.52 years
S.D. 9.036	S.D. 10.320	S.D. 10.872	S.D. 9.612

3. Level of education

Large dairy cooperative: It was found that the most of farmer samples have level of education in elementary school grade 4 which is averaged at 53.20%, and the secondary of level of education in Primary school grade 6 which is averaged at 15.80%. There are only few farmer sample uneducated which is averaged at 1.20%. (Table 4.3)

Medium dairy cooperative: It was found that the most of farmer samples have level of education in elementary school grade 4 which is averaged at 41.20%, and the secondary level of education in Secondary school grade 3 which is averaged at 20.60%. There are only few farmer samples have level of education in high vocational certificate or diploma and bachelor degree which is averaged at 7.80%. (Table 4.3)

Small dairy cooperative: It was found that the most of farmer samples have level of education in elementary school grade 4 and Secondary school grade 3 which is averaged at 31.20%, and the secondary level of education in bachelor degree which is averaged at 25.00%. There are only few farmer samples have level of education in secondary school grade 6 or vocational certificate and high vocational certificate or diploma which is averaged at 6.20%. (Table 4.3)

Table 4.3 Level of education

Level of education	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Uneducated	2	1.20	-	-	-	-	2	0.70
Elementary school grade 4	91	53.20	42	41.20	5	31.20	138	47.80
Primary school grade 6	27	15.80	13	12.70	-	-	40	13.80
Secondary school grade 3	21	12.30	21	20.60	5	31.20	47	16.30
Secondary school grade 6 or vocational certificate	13	7.60	10	9.80	1	6.20	24	8.30
High vocational certificate or diploma	10	5.80	8	7.80	1	6.20	19	6.60
Bachelor degree	7	4.10	8	7.80	4	25.00	19	6.60
Total	171	100.00	102	100.00	16	100.00	289	100.00

4. Experience in dairy farming

Large dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 33 years and minimum at 1 years with an average at 13.16 years. The most of farmer samples have experience in dairy farming between 11 – 15 years which is averaged at 26.90%, and the secondary span of experience in dairy farming is between 6 – 10 years which is averaged at 19.90%. There are only few farmer samples have experience in dairy farming equivalent to or more than 26 years which is averaged at 5.30%. (Table 4.4)

Medium dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 26 years and minimum at 1 years with an average at 9.98 years. The most of farmer samples have experience in dairy farming between 6 – 10 years which is averaged at 34.30%, and the secondary span of experience in dairy farming is between 11 – 15 years which is averaged at 25.50%. There are only few farmer samples have experience in dairy farming equivalent to or more than 26 years which is averaged at 1.00%. (Table 4.4)

Small dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 12 years and minimum at 1 years with an average at 5.94 years. The most of farmer samples have experience in dairy farming between 1 – 5 years which is averaged at 56.20%, and the secondary span of experience in dairy farming is between 6 – 10 years which is averaged at 37.60%. There are only few farmer samples have experience in dairy farming between 11 - 15 years which is averaged at 6.20%. (Table 4.4)

Table 4.4 Experience in dairy farming

Experience in dairy farming (year)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
1 - 5	33	19.30	24	23.50	9	56.20	66	22.80
6 – 10	34	19.90	35	34.30	6	37.60	75	25.90
11 – 15	46	26.90	26	25.50	1	6.20	73	25.30
16 – 20	25	14.60	11	10.80	-	-	36	12.50
21 - 25	24	14.00	5	4.90	-	-	29	10.00
Equivalent to or more than 26	9	5.30	1	1.00	-	-	10	3.50
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 33 years	Maximum 26 years	Maximum 12 years	Maximum 33 years
Minimum 1 years	Minimum 1 years	Minimum 1 years	Minimum 1 years
Mean 13.16 years	Mean 9.98 years	Mean 5.94 years	Mean 11.64 years
S.D. 7.314	S.D. 5.553	S.D. 3.043	S.D. 6.858

5. Period on membership of dairy cooperative

Large dairy cooperative: It was found that the farmer samples have period on member of dairy cooperative maximum at 30 years and minimum at 1 years with an average at 12.22 years. The most of farmer samples have period on member of dairy cooperative between 1 – 5 years which is averaged at 28.00%, and the secondary span of period on member of dairy cooperative is between 6 – 10 years which is averaged at 24.00%. There are only few farmer samples have period on member of dairy cooperative equivalent to or more than 26 years which is averaged at 1.80%. (Table 4.5)

Medium dairy cooperative: It was found that the farmer samples have period on member of dairy cooperative maximum at 21 years and minimum at 1 years with an average at 7.07 years. The most of farmer samples have period on member of dairy cooperative between 1 – 15 years which is averaged at 51.00%, and the secondary span of period on member of dairy cooperative is between 6 – 10 years which is averaged at 24.50%. There are only few farmer samples have period on member of dairy cooperative between 21 - 25 years which is averaged at 2.90%. (Table 4.5)

Small dairy cooperative: It was found that the farmer samples have period on member of dairy cooperative maximum at 13 years and minimum at 1 years with an average at 6.31 years. The most of farmer samples have period on member of dairy cooperative between 1 – 5 years which is averaged at 56.20%, and the secondary span of period on member of dairy cooperative is between 6 – 10 years which is averaged at 31.20%. There are only few farmer samples have period on member of dairy cooperative between 11 - 15 years which is averaged at 12.60%. (Table 4.5)

Table 4.5 Period on membership of dairy cooperative

Period on membership of Dairy Cooperative (year)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
1 – 5	33	19.30	52	51.00	9	56.20	94	32.50
6 – 10	41	24.00	25	24.50	5	31.20	71	24.60
11 – 15	48	28.00	16	15.70	2	12.60	66	22.80
16 – 20	25	14.60	6	5.90	-	-	31	10.80
21 – 25	21	12.30	3	2.90	-	-	24	8.30
Equivalent to or more than 26	3	1.80	-	-	-	-	3	1.00
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 30 years	Maximum 21 years	Maximum 13 years	Maximum 30 years
Minimum 1 years	Minimum 1 years	Minimum 1 years	Minimum 1 years
Mean 12.22 years	Mean 7.07 years	Mean 6.31 years	Mean 10.08 years
S.D. 6.725	S.D. 5.084	S.D. 3.3.61	S.D. 6.563

6. Knowledge in dairy farming

Large dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in both species and blood level of most popular dairy. It can be evidenced by the questionnaire that they chose the correct answer 97.70 %. The secondary issue is kinds of dairy's feed in which they chose the correct answer 95.90 %. The less knowledgeable issue is proper weight of calf to wean from the mother's milk that they chose the wrong answer 88.90 %. (Table 4.6)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 16.05 score which is in a high level (more than 16.00 scores). The most of farmer samples have medium level of knowledge in dairy farming (9.00 – 16.00 scores) averaged at 56.70%. The secondary group who has high level of knowledge in dairy farming (more than 16.00 scores) is averaged at 42.70%. And the minority group who has low level of knowledge in dairy farming (less than 9.00 scores) is averaged at 0.60%. In this research, it also discovered that the farmer samples of large dairy cooperative gained lowest level of knowledge in dairy farming at 7 scores and the highest at 22 scores.

Medium dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in species, blood level of most popular dairy and a good udder of dairy. It can be evidenced by the questionnaire that they chose the correct answer 99.00%. The secondary issue is kinds of dairy feed and pause milking before dairy deliver in which they chose the correct answer 94.10 %. The less knowledgeable issue is proper weight of calf to wean from the mother's milk that they chose the wrong answer 92.20%. (Table 4.6)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 16.12 score which is in a high level (more than 16.00 scores). The most of farmer samples have medium level of knowledge in dairy farming (9.00 – 16.00 scores) averaged at 59.80%. The secondary group who have high level of knowledge in dairy farming (more than 16.00 scores) is averaged at 40.20%. In this research, it also discovered that the farmers samples of medium dairy cooperative gained lowest level of knowledge in dairy farming at 11 scores and the highest at 22 scores

Small dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in quality prevention of raw milk. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is dairy's feces management, optimal period of artificial insemination, kinds of dairy feed, calf raising management, pause milking before dairy deliver, disease and mastitis protection in which they chose the correct answer 93.80%. The less knowledgeable issue is proper weight of calf to wean from the mother's milk that they chose the wrong answer 93.80%. (Table 4.6)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 15.56 score which is in a medium level (9.00 - 16.00 scores). The most of farmer samples have medium level of knowledge in dairy farming (9.00 – 16.00 scores) averaged at 62.50%. The secondary group who have high level of knowledge in dairy farming (more than 16.00 scores) is averaged at 31.20%. In this research, it also discovered that the farmers samples of medium dairy cooperative gained lowest level of knowledge in dairy farming at 7 scores and the highest at 21 scores

Table 4.6 Knowledge in dairy farming

Knowledge in dairy farming	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Dairy housing have to build in north-south line in order to well ventilation	51	29.80	120	70.20	37	36.30	65	63.70	7	43.80	9	56.20
2. Housing have to separate from feces at least 10 meters	158	92.40	13	7.60	92	90.20	10	9.80	15	93.80	1	6.20
3. Dairy farming could co-raising with other livestock in the same area	136	79.50	35	20.50	81	79.40	21	20.60	10	62.50	6	37.50
4. Popular dairy breed are hybrid of Holstein – Friesian with a level of breed more than 75%	167	97.70	4	2.30	101	99.00	1	1.00	14	87.50	2	12.50
5. Shape of a good trait of dairy from head to bottom are square even though view from the top or side	56	32.70	115	67.30	24	23.50	78	76.50	4	25.00	12	75.00
6. A good udder shouldn't too large till flabby, width, depth and attach to the body resemble to dish-shaped udder	162	94.70	9	5.30	101	99.00	1	1.00	14	87.50	2	12.50
7. First mating of heifer start at 14-18 months in average	135	78.90	36	21.10	85	83.30	17	16.70	14	87.50	2	12.50

Table 4.6 Knowledge in dairy farming (continue)

Knowledge in dairy farming	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
8. Optimal period of artificial insemination are12-18 hours after estrus	155	90.60	16	9.40	89	87.30	13	12.70	15	93.80	1	6.20
9. Next artificial insemination of parturition are the first estrus	153	89.50	18	10.50	82	80.40	20	19.60	14	87.50	2	12.50
10. Dairy's feed divided into 2 types i.e concentrate and roughage	164	95.90	7	4.10	96	94.10	6	5.90	15	93.80	1	6.20
11. Concentrate feeding based on dairy give a raw milk 2 kg per feed 1 kg.	102	59.60	69	40.40	70	68.60	32	31.40	9	56.20	7	43.80
12. Solution for less appetite in summer season by alternate feed formula through reduce energy and protein (reduce concentrate)	103	60.20	68	39.80	64	62.70	38	37.30	9	56.20	7	43.80
13. Parturition weight 400 kg. should give fresh grass 22.4 kg. per day	118	69.00	53	31.00	63	61.80	39	38.20	11	68.80	5	31.20
14. Area of pasture for dairy farming should be 1 rai / 2 dairy	46	26.90	125	73.10	28	27.50	74	72.50	3	18.80	13	81.20
15. Ratio of urea-treated rice straw are 100 : 100 : 10 (straw: water: urea) by weight	73	42.70	98	57.30	50	49.00	52	51.00	5	31.20	11	68.80
16. Colostrum feeding immediately within 2 hrs after deliver (2 kg)	153	89.50	18	10.50	89	87.30	13	12.70	15	93.80	1	6.20

Table 4.6 Knowledge in dairy farming (continue)

Knowledge in dairy farming	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
17. Optimal calf weight for weaning not less than 50 kg.	19	11.10	152	88.90	8	7.80	94	92.20	1	6.20	15	93.80
18. Should pause milking about 30 days before deliver	152	88.90	19	11.10	96	94.10	6	5.90	15	93.80	1	6.20
19. Vaccination for mouth and feet disease twice a year	145	84.80	26	15.20	94	92.20	8	7.80	15	93.80	1	6.20
20. Retention new dairy at least 3 days before let them in group	49	28.70	122	71.30	27	26.50	75	73.50	3	18.80	13	81.20
21. Milk that just milking couldn't keep exceed than 3 hours.	151	88.30	20	11.70	88	86.30	14	13.70	16	100.00	-	-
22. Milking the mastitis dairy before healthy dairy in order to prevent disease spread	155	90.60	16	9.40	84	82.40	18	17.60	15	93.80	1	6.20
23. CMT can't check mastitis with dairy which postpartum for 15 day	89	52.00	82	48.00	66	64.70	36	35.30	7	43.80	9	56.20
24. Teat will close after finished milking about 15 minute	53	31.00	118	69.00	29	28.40	73	71.60	3	18.80	13	81.20

Summarize the score of knowledge in dairy farming	LDC		MDC		SDC	
	No.	%	No.	%	No.	%
Score of knowledge in dairy farming (Total 24 score)						
knowledge in dairy farming in low level (Less than 9.00)	1	0.60	-	-	1	6.20
knowledge in dairy farming in medium level. (Between 9.00 – 16.00)	97	56.70	61	59.80	10	62.50
knowledge on dairy farming in high level. (More than 16.00)	73	42.70	41	40.20	5	31.20
Total	171	100.00	102	100.00	16	100.00

	LDC	MDC	SDC
Score Maximum	22	22	21
Score Minimum	7	11	7
Score Mean	16.05	16.12	15.56
Standard Deviation	2.310	2.060	3.310

7. Practice in dairy farming

Large dairy cooperative

It was found that practice in dairy farming in high level towards milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 1.95), send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 1.89), discard leftover feed every morning ($\overline{X}$ = 1.69), artificial insemination (AI) recording ($\overline{X}$ = 1.68), separate sick dairy from healthy immediately ($\overline{X}$ = 1.66), request the result of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 1.60), inform officer or take advise when dairy have abnormal symptom ($\overline{X}$ = 1.59), checking milking equipment before use ($\overline{X}$ = 1.58), always read antibiotic's direction ($\overline{X}$ = 1.57), annually sort out from herd ($\overline{X}$ = 1.48) and monitoring conception after AI 50 days respectively (Table 4.7)

Practice in dairy farming in medium level towards clearly classification of dairy such as calf, growing cattle, heifer etc ($\overline{X}$ = 1.11), make silage, hay, etc for dry season ($\overline{X}$ = 1.11), wash hand every time before milking the next dairy ($\overline{X}$ = 1.11), checking concentrate feed before feeding ($\overline{X}$ = 1.07), always checking mastitis by CMT before milking ($\overline{X}$ = 0.91), accounting for farm management and reduce cost ($\overline{X}$ = 0.74) and check up dairy's health before AI ($\overline{X}$ = 0.70) respectively (Table 4.7)

Practice in dairy farming in low level towards use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 0.49) and annually send sample of soil and water for checking quality respectively (Table 4.7)

As a whole, the farmer samples of large dairy cooperative have practice in dairy farming in medium level ($\overline{X}$ = 1.28).

Medium dairy cooperative

It was found that practice in dairy farming in high level towards milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 1.98), artificial insemination (AI) recording ($\overline{X}$ = 1.90), send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 1.85), discard leftover feed every morning ($\overline{X}$ = 1.80), always read antibiotic's direction ($\overline{X}$ = 1.76), request the result

of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 1.72), separate sick dairy from healthy immediately ($\overline{X}$ = 1.70), checking milking equipment before use ($\overline{X}$ = 1.70), inform officer or take advise when dairy have abnormal symptom ($\overline{X}$ = 1.55), clearly classification of dairy such as calf, growing cattle, heifer etc. ($\overline{X}$ = 1.50), monitoring conception after AI 50 days ($\overline{X}$ = 1.45), annually sort out from herd ($\overline{X}$ = 1.44) and make silage, hay, etc for dry season ($\overline{X}$ = 1.43) respectively (Table 4.7)

Practice in dairy farming in medium level towards wash hand every time before milking the next dairy ($\overline{X}$ = 1.33), checking concentrate feed before feeding ($\overline{X}$ = 1.21), always checking mastitis by CMT before milking ($\overline{X}$ = 1.12), check up dairy's health before AI ($\overline{X}$ =0.84) and use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 0.68) respectively (Table 4.7)

Practice in dairy farming in low level towards accounting for farm management and reduce cost ($\overline{X}$ = 0.65) and annually send sample of soil and water for checking quality ($\overline{X}$ =0.16) respectively (Table 4.7)

As a whole, the farmer samples of medium dairy cooperative have practice in dairy farming in medium level ($\overline{X}$ = 1.39)

Small dairy cooperative

It was found that practice in dairy farming in high level towards discard leftover feed every morning ($\overline{X}$ = 2.00), milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 1.94), separate sick dairy from healthy immediately ($\overline{X}$ = 1.88), artificial insemination (AI) recording ($\overline{X}$ = 1.81), Inform officer or take advise when dairy have abnormal symptom ($\overline{X}$ = 1.63), always read antibiotic's direction ($\overline{X}$ = 1.56), checking milking equipment before use ($\overline{X}$ = 1.50) and monitoring conception after AI 50 days ($\overline{X}$ = 1.44) respectively (Table 4.7)

Practice in dairy farming in medium level towards request the result of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 1.25), clearly classification of dairy such as calf, growing cattle, heifer etc.

($\overline{X}$ = 1.19), checking concentrate feed before feeding ($\overline{X}$ = 1.19), send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 1.19), wash hand every time before milking the next dairy ($\overline{X}$ = 1.13), annually sort out from herd ($\overline{X}$ = 1.06), make silage, hay, etc for dry season ($\overline{X}$ = 0.94), always checking mastitis by CMT before milking ($\overline{X}$ = 0.81) and check up dairy's health before AI ($\overline{X}$ = 0.75) respectively (Table 4.7)

Practice in dairy farming in low level towards accounting for farm management and reduce cost ($\overline{X}$ = 0.44), annually send sample of soil and water for checking quality ($\overline{X}$ = 0.38) and Use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 0.25) respectively (Table 4.7)

As a whole, the farmer samples of small dairy cooperative have practice in dairy farming in medium level ($\overline{X}$ = 1.22)

Table 4.7 Level of practice in dairy farming

Level of practice in dairy farming	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice
1.Artificial insemination (AI) recording	1.68	0.61	High	1.90	0.36	High	1.81	0.54	High
2. Monitoring conception after AI 50 days	1.39	0.75	High	1.45	0.68	High	1.44	0.73	High
3. Check up dairy's health before AI	0.70	0.81	Medium	0.84	0.86	Medium	0.75	0.93	Medium
4. Accounting for farm management and reduce cost	0.74	0.86	Medium	0.65	0.82	Low	0.44	0.73	Low
5. Clearly classification of dairy such as calf, growing cattle, heifer etc.	1.11	0.96	Medium	1.50	0.82	High	1.19	0.91	Medium
6. Annually sort out from herd	1.48	0.64	High	1.44	0.73	High	1.06	0.85	Medium
7. Checking concentrate feed before feeding	1.07	0.91	Medium	1.21	0.90	Medium	1.19	0.91	Medium
8. Make silage, hay, etc for dry season	1.11	0.95	Medium	1.43	0.79	High	0.94	0.93	Medium
9. Discard leftover feed every morning	1.69	0.62	High	1.80	0.49	High	2.00	0.00	High
10. Always read antibiotic's direction	1.57	0.60	High	1.76	0.45	High	1.56	0.73	High
11. Separate sick dairy from healthy immediately	1.66	0.63	High	1.70	0.58	High	1.88	0.34	High
12. Inform officer or take advise when dairy has abnormal symptom	1.59	0.53	High	1.55	0.57	High	1.63	0.50	High
13. Always checking mastitis by CMT before milking	0.91	0.46	Medium	1.12	0.53	Medium	0.81	0.54	Medium

Table 4.7 Level of practice in dairy farming (continue)

Level of practice in dairy farming	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice
14. Use 2 cloths per 1 dairy to clean the udder	0.49	0.78	Low	0.68	0.86	Medium	0.25	0.45	Low
15. Checking milking equipment before use	1.58	0.61	High	1.70	0.61	High	1.50	0.73	High
16. Wash hand every time before milking the next dairy	1.11	0.90	Medium	1.33	0.90	Medium	1.13	0.96	Medium
17. Send sample of a raw milk to examination for antibiotic residues	1.89	0.38	High	1.85	0.41	High	1.19	0.91	Medium
18. Request the result of milk quality from Dairy Cooperative or government officer concerning	1.60	0.72	High	1.72	0.64	High	1.25	1.00	Medium
19. Annually Send sample of soil and water for checking quality	0.20	0.48	Low	0.16	0.48	Low	0.38	0.62	Low
20. Milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hour	1.95	0.28	High	1.98	0.14	High	1.94	0.25	High
Total	**1.28**	**0.23**	**Medium**	**1.39**	**0.23**	**High**	**1.22**	**0.38**	**Medium**

Remark Divide level of dairy farmers' practice in dairy farming in upper northern Thailand total 3 levels including
Practice in dairy farming in low level. (0.00 – 0.66 score)
Practice in dairy farming in medium level.(0.67 – 1.33 score)
Practice in dairy farming in high level. (1.34 – 2.00 score)

Economic factors

8. Number of family member (include farmer)

Large dairy cooperative: It was found that the farmer samples have number of family member maximum at 8 persons and minimum at 1 persons with an average at 3.74 persons. The most of farmer samples have number of family member between 3 – 4 persons which is averaged at 69.60%, and the secondary span of family member is between 5 – 6 persons which is averaged at 16.40%. There are only few farmer samples have number of family member equivalent to or more than 7 persons which is averaged at 2.30%. (Table 4.8)

Medium dairy cooperative: It was found that the farmer samples have number of family member maximum at 9 persons and minimum at 1 persons with an average at 3.87 persons. The most of farmer samples have number of family member between 3 – 4 persons which is averaged at 66.70%, and the secondary span of family member is between 5 – 6 persons which is averaged at 18.60%. There are only few farmer samples have number of family member equivalent to or more than 7 persons which is averaged at 3.90%. (Table 4.8)

Small dairy cooperative: It was found that the farmer samples have number of family member maximum at 5 persons and minimum at 2 persons with an average at 3.76 persons. The most of farmer samples have number of family member between 3 – 4 persons which is averaged at 62.50%, and the secondary span of family member is between 1 – 2 persons which is averaged at 25.00%. There are only few farmer samples have number of family member between 5 - 6 persons which is averaged at 12.50%. (Table 4.8)

Table 4.8 Number of family member (include farmer)

Number of family member (person)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
1 - 2	20	11.70	11	10.80	4	25.00	35	12.10
3 – 4	119	69.60	68	66.70	10	62.50	197	68.20
5 – 6	28	16.40	19	18.60	2	12.50	49	16.90
Equivalent to or more than 7	4	2.30	4	3.90	-	-	8	2.80
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 8 person	Maximum 9 person	Maximum 5 person	Maximum 9 person
Minimum 1 person	Minimum 1 person	Minimum 2 person	Minimum 1 person
Mean 3.74 person	Mean 3.87 person	Mean 3.25 person	Mean 3.76 person
S.D. 1.161	S.D. 1.310	S.D. 1.000	S.D. 1.212

9. Number of labours for dairy farming

Large dairy cooperative: It was found that the farmer samples have number of labours for dairy farming maximum at 6 persons and minimum at 1 persons with an average at 2.05 persons. The most of farmer samples have number of labours for dairy farming between 1 – 2 persons which is averaged at 84.80%, and the secondary span of labours for dairy farming is between 3 – 4 persons which is averaged at 13.50%. There are only few farmer samples have number of labours for dairy farming between 5 – 6 persons which is averaged at 1.70%. (Table 4.9)

Medium dairy cooperative: It was found that the farmer samples have number of labours for dairy farming maximum at 4 persons and minimum at 1 persons with an average at 2.07 persons. The most of farmer samples have number of labours for dairy farming between 1 – 2 persons which is averaged at 84.40%, and have number of labours for dairy farming between 3 – 4 persons which is averaged at 19.60%. (Table 4.9)

Small dairy cooperative: It was found that the farmer samples have number of labours for dairy farming maximum at 4 persons and minimum at 1 persons with an average at 1.88 persons. The most of farmer samples have number of labours for dairy farming between 1 – 2 persons which is averaged at 87.50%, and have number of labours for dairy farming between 3 – 4 persons which is averaged at 12.50%. (Table 4.9)

Table 4.9 Number of labours for dairy farming

Number of labours for dairy farming (person)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
1 - 2	145	84.80	82	80.40	14	87.50	241	83.40
3 – 4	23	13.50	20	19.60	2	12.50	45	15.60
5 - 6	3	1.70	-	-	-	-	3	1.00
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 6 person	Maximum 4 person	Maximum 4 person	Maximum 6 person
Minimum 1 person	Minimum 1 person	Minimum 1 person	Minimum 1 person
Mean 2.05 person	Mean 2.07 person	Mean 1.88 person	Mean 2.05 person
S.D. 0.842	S.D. 0.664	S.D. 0.806	S.D. 0.780

10. Total Outstanding debts (approximately)

Large dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 700,000 Baht and minimum at 3,000 Baht with an average at 179,648.55 Baht. The most of farmer samples have total outstanding debts less than or equivalent to 400,000 Baht which is averaged at 73.70%, and the secondary, the farmer samples do not have total outstanding debts which is averaged at 19.30%. There are only few farmer samples have total outstanding debts between 400,001 – 800,000 Baht which is averaged at 7.00%. (Table 4.10)

Medium dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 2,350,000 Baht and minimum at 10,000 Baht with an average at 238,197.78 Baht. The most of farmer samples have total outstanding debts less than or equivalent to 400,000 Baht which is averaged at 75.50%, and the secondary, the farmer samples do not have total outstanding debts and has total outstanding debts between 400,001 – 800,000 Baht which is averaged at 11.80%. There are only few farmer samples have total outstanding debts equivalent to or more than 2,000,001 baht which is averaged at 0.98%. (Table 4.10)

Small dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 1,000,000 Baht and minimum at 15,000 Baht with an average at 320,500.00 Baht. The most of farmer samples have total outstanding debts less than or equivalent to 400,000 Baht which is averaged at 68.80%, and the secondary, the farmer samples do not have total outstanding debts and has total outstanding debts between 400,001 – 800,000 Baht which is averaged at 12.50%. There are only few farmer samples have total outstanding debts between 800,001 – 1,200,000 Baht which is averaged at 6.20%. (Table 4.10)

Table 4.10 Total Outstanding debts (approximately)

Total Outstanding debts (Baht)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not have debts	33	19.30	12	11.80	2	12.50	47	16.20
Less than or equivalent to 400,000	126	73.70	77	75.50	11	68.80	214	74.00
400,001 – 800,000	12	7.00	12	11.80	2	12.50	26	9.00
800,001 – 1,200,000	-	-	-	-	1	6.20	1	0.4
1,200,001 – 1,600,000	-	-	-	-	-	-	-	-
1,600,001 – 2,000,000	-	-	-	-	-	-	-	-
equivalent to or more than 2,000,001	-	-	1	0.90	-	-	1	0.4
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 700,000 Baht	Maximum 2,350,000 Baht	Maximum 1,000,000 Baht	Maximum 2,350,000 Baht
Minimum 3,000 Baht	Minimum 10,000 Baht	Minimum 15,000 Baht	Minimum 3,000 Baht
Mean 179,648.55 Baht	Mean 238,197.78 Baht	Mean 320,500.00 Baht	Mean 209,571.49 Baht
S.D. 155,299.00	S.D. 278,911.00	S.D. 261,986.00	S.D. 218,512.00

Social factors

11. Occupying in dairy cooperative position

Large dairy cooperative: It was found that the most of farmer samples who do not occupy any dairy cooperative position is averaged at 88.90% and the secondary, the farmer sample who occupies a position in dairy cooperative as a committee is averaged at 8.20% respectively**.** There are only few farmer samples who serve as a president, secretary and inspector of dairy cooperative is averaged at 0.60%. (Table 4.11)

Medium dairy cooperative: It was found that the most of farmer samples who do not occupy any dairy cooperative position is averaged at 67.60% and the secondary, the farmer samples who occupies a position in dairy cooperative as a committee is averaged at 20.60% respectively**.** There are only few farmer samples who serve as an inspector of dairy cooperative is averaged at 2.00%. (Table 4.11)

Small dairy cooperative: It was found that the most of farmer samples who do not occupy any dairy cooperative position is averaged at 50.00% and the secondary, the farmer samples who occupies a position in dairy cooperative as a

committee and inspector is averaged at 18.80% respectively**.** There are only few farmer samples who serve as a vice president of dairy cooperative is averaged at 12.40%. (Table 4.11)

Table 4.11 Occupying in dairy cooperative position

Occupying in dairy cooperative position	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not occupy in position	152	88.90	69	67.60	8	50.00	229	79.20
President	1	0.60	3	2.90	-	-	4	1.40
Vice President	-	-	4	3.90	2	12.40	6	2.10
Secretary	1	0.60	3	2.90	-	-	4	1.40
Treasurer	2	1.20	-	-	-	-	5	1.70
Committee	14	8.20	21	20.60	3	18.80	38	13.10
Inspector	1	0.60	2	2.00	3	18.80	3	1.00
Total	171	100.00	102	100.00	16	100.00	289	100.00

12. Occupying in social position

Large dairy cooperative: It was found that the most of farmer samples who do not have any social position is averaged at 86.50% and the secondary, the farmer samples who occupies as a volunteer such as livestock volunteer, village health volunteer and committee of village fund project is averaged at 7.10% respectively**.** There are only few farmer samples who serve as a committee of Sub district Administration Organization is averaged at 0.60%. (Table 4.12)

Medium dairy cooperative: It was found that the most of farmer samples who do not have any social position is averaged at 85.30% and the secondary, the farmer samples who occupies as a volunteer such as livestock volunteer, village health volunteer and committee of village fund project is averaged at 6.90% respectively**.** There are only few farmers samples who serve as a village headman or assistant which is averaged at 2.00%. (Table 4.12)

Small dairy cooperative: It was found that the all of farmer samples do not have social position which is averaged at 100.00%. (Table 4.12)

Table 4.12 Occupying in social position

Occupying in social position	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not have social position	148	86.50	87	85.30	16	100.00	250	86.50
Sub - district headman or assistant	-	-	-	-	-	-	-	-
Village headman or assistant	3	1.70	2	2.00	-	-	5	1.70
committee of Sub district Administration Organization	2	0.60	3	2.90	-	-	5	1.70
Volunteer	7	4.10	3	2.90	-	-	10	3.50
Other	12	7.10	7	6.90	-	-	19	6.60
Total	171	100.00	102	100.00	16	100.00	289	100.00

13. Participation in various activities of dairy cooperative

Large dairy cooperative

Participation in the activities of dairy cooperative in high level towards annual general meeting attendance ($\overline{X}$ = 1.91), group meeting attendance ($\overline{X}$ = 1.87), always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 1.85), join in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 1.46) and meeting and training about dairy farming ($\overline{X}$ = 1.44) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in medium level towards meeting and training about principle of dairy cooperative operation attendance ($\overline{X}$ = 0.94), purchase additional shares ($\overline{X}$ = 0.92) and propose opinion, problem's solution in the meeting ($\overline{X}$ = 0.80) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in low level towards used to be representative of cooperative in government activity such as training ($\overline{X}$ = 0.51) and recommend other member to purchase additional shares ($\overline{X}$ = 0.39) respectively. (Table 4.13)

As a whole, the farmer samples of large dairy cooperative have participation in the activities of dairy cooperative in medium level. ($\overline{X}$ = 1.21)

Medium dairy cooperative

Participation in the activities of dairy cooperative in high level towards group meeting attendance ($\overline{X}$ = 1.92), always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 1.92), annual general meeting attendance ($\overline{X}$ = 1.90), meeting and training about dairy farming ($\overline{X}$ = 1.59) and join in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 1.58) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in medium level towards purchase additional shares ($\overline{X}$ = 1.02), propose opinion, problem's solution in the meeting ($\overline{X}$ = 0.96) and meeting and training about principle of Dairy Cooperative operation attendance ($\overline{X}$ = 0.88) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in low level towards used to be representative of cooperative in government activity such as training ($\overline{X}$ = 0.67) and recommend other member to purchase additional shares ($\overline{X}$ = 0.34) respectively. (Table 4.13)

As a whole, the farmer samples of medium dairy cooperative have participation in the activities of dairy cooperative in medium level. ($\overline{X}$ = 1.28)

Small dairy cooperative

Participation in the activities of dairy cooperative in high level towards group meeting attendance ($\overline{X}$ = 2.00), annual general meeting attendance ($\overline{X}$ = 2.00), always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 1.88) and meeting and training about dairy farming ($\overline{X}$ = 1.44) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in medium level towards join in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 1.31), meeting and training about principle of dairy cooperative operation attendance ($\overline{X}$ = 1.13), purchase additional shares ($\overline{X}$ = 0.94) and used to

be representative of cooperative in government activity such as training ($\overline{X}$ = 0.69) respectively. (Table 4.13)

Participation in the activities of dairy cooperative in low level towards propose opinion, problem's solution in the meeting ($\overline{X}$ = 0.63) and recommended other member to purchase additional shares ($\overline{X}$ = 0.19) respectively. (Table 4.13)

As a whole, the farmer samples of small dairy cooperative have participation in the activities of dairy cooperative in medium level. ($\overline{X}$ = 1.22)

Table 4.13 Level of participation in various activities of dairy cooperative

Level of participation in various activities of dairy cooperative	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of participation	($\overline{X}$)	S.D.	Level of participation	($\overline{X}$)	S.D.	Level of participation
1. Group Meeting attendance	1.87	0.34	High	1.92	0.27	High	2.00	0.00	High
2. Annual general meeting attendance	1.91	0.35	High	1.90	0.36	High	2.00	0.00	High
3. Meeting and training about principle of dairy cooperative operation attendance	0.94	0.80	Medium	0.88	0.80	Medium	1.13	0.89	Medium
4. Meeting and training about dairy farming	1.44	0.60	High	1.59	0.55	High	1.44	0.73	High
5. Purchase additional shares	0.92	0.95	Medium	1.02	0.97	Medium	0.94	1.00	Medium
6. You have been recommended other member to purchase additional shares	0.39	0.60	Low	0.34	0.59	Low	0.19	0.54	Low
7. You have been proposed opinion, problem's solution in the meeting	0.80	0.73	Medium	0.96	0.72	Medium	0.63	0.72	Low
8. You always pay attention in quality milk production such as correct and clean milking	1.85	0.42	High	1.92	0.34	High	1.88	0.50	High
9. You have been joined in social activity of cooperative such as cooperative anniversary, Children day	1.46	0.67	High	1.58	0.60	High	1.31	0.87	Medium
10. You used to be representative of cooperative in government activity such as training	0.51	0.65	Low	0.67	0.78	Low	0.69	0.87	Medium
Total	**1.21**	**0.30**	**Medium**	**1.28**	**0.31**	**Medium**	**1.22**	**0.42**	**Medium**

Remark Divide level of dairy farmers' participation in various activities of dairy cooperative in upper northern Thailand total 3 levels including

Participation in the activities of dairy cooperative in low level. (0.00 – 0.66 score)

Participation in the activities of dairy cooperative in medium level. (0.67 – 1.33 score)

Participation in the activities of dairy cooperative in high level. (1.34 – 2.00 score)

14. Acquire information about dairy farming from various medias

Large dairy cooperative: It was found that the most of farmer samples receive information about dairy farming from communication board of dairy cooperative which is averaged at 87.70%, and the secondary, receive information about dairy farming from farmer's friend which is averaged at 79.50%. There are only few farmer samples receive information about dairy farming from internet which is averaged at 3.50%. (Table 4.14)

Medium Dairy Cooperative: It was found that the most of farmer samples receive information about dairy farming from communication board of dairy cooperative which is averaged at 79.40%, and the secondary, receive information about dairy farming from farmer's friend which is averaged at 76.50%. There are only few farmer samples receive information about dairy farming from internet which is averaged at 5.90%. (Table 4.14)

Small Dairy Cooperative: It was found that the most of farmer samples receive information about dairy farming from communication board of dairy cooperative which is averaged at 87.50%, and the secondary, receive information about dairy farming from television and farmer's friend which is averaged at 81.20%. There are only few farmer samples receive information about dairy farming from internet which is averaged at 12.50%. (Table 4.14)

Table 4.14 Acquire information about dairy farming from various medias (number of time per month)

Source of information[1/]	LDC (n = 171)					MDC (n = 102)					SDC (n = 16)				
	Receipt		Never receipt		$\overline{X}$	Receipt		Never receipt		$\overline{X}$	Receipt		Never receipt		$\overline{X}$
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Brochure/Document	72	42.10	99	57.90	1.49	42	41.20	60	58.80	1.52	4	25.00	12	75.00	1.50
Newspaper	64	37.40	107	62.60	2.05	27	26.50	75	73.50	1.70	7	43.80	9	56.20	2.57
Livestock magazine	44	25.70	127	74.30	1.68	39	38.20	63	61.80	1.38	4	25.00	12	75.00	1.25
Radio	87	50.90	84	49.10	2.47	44	43.10	58	56.90	3.18	8	50.00	8	50.00	2.25
Television	124	72.50	47	27.50	2.60	70	68.60	32	31.40	3.03	13	81.20	3	18.80	2.08
Farmer's friend	136	79.50	35	20.50	5.62	78	76.50	24	23.50	5.83	13	81.20	3	18.80	5.31
Communication board of Dairy Cooperative	150	87.70	21	12.30	3.79	81	79.40	21	20.60	3.64	14	87.50	2	12.50	3.00
Internet	6	3.50	165	96.50	3.00	6	5.90	96	94.10	4.83	2	12.50	14	87.50	4.00

Remark: [1/] Could answer more than 1 item

15. Communication with officer concerning dairy farming

Large dairy cooperative: It was found that the most of farmer samples communicate with artificial insemination volunteer which is averaged at 84.20%, and the secondary, communicate with dairy cooperative officer which is averaged at 77.20%. There are only few farmer samples communicate with lecturer of academy which is averaged at 21.10%. (Table 4.15)

Medium dairy Cooperative: It was found that the most of farmer samples communicate with district artificial insemination officer which is averaged at 80.40%, and the secondary, communicate with artificial insemination volunteer which is averaged at 72.50%. There are only few farmer samples communicate with other government officer which is averaged at 1.00%. (Table 4.15)

Small dairy cooperative: It was found that the most of farmer samples communicate with district artificial insemination officer, artificial insemination volunteer and dairy cooperative officer which is averaged at 68.80%, and the secondary, communicate with district livestock officer which is averaged at 56.20. There are only few farmer samples communicate with lecturer of academy which is averaged at 6.20%. (Table 4.15)

Table 4.15 Communication with officer concerning dairy farming (number of time per month)

Officer[1/]	LDC (n = 171)					MDC (n = 102)					SDC (n = 16)				
	Communicate		Never		$\bar{X}$	Communicate		Never		$\bar{X}$	Communicate		Never		$\bar{X}$
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
District Livestock Officer	81	47.40	90	52.60	1.49	65	63.70	37	36.30	1.72	9	56.20	7	43.80	1.44
District Artificial Insemination Officer	121	70.80	50	29.20	2.55	82	80.40	20	19.60	2.76	11	68.80	5	31.20	1.82
Artificial Insemination Volunteer	144	84.20	27	15.80	3.06	74	72.50	28	27.50	3.18	11	68.80	5	31.20	2.09
Lecturer of academy	36	21.10	135	78.90	1.42	23	22.50	79	77.50	1.96	1	6.20	15	93.80	1.00
Dairy Cooperative Officer	132	77.20	39	22.80	3.84	71	69.60	31	30.40	4.20	11	68.80	5	31.20	4.45
Representative from company	17	9.90	154	90.10	1.71	17	16.70	85	83.30	2.47	3	18.80	13	81.20	1.33
Other government officer	-	-	171	100.00	-	1	1.00	101	99.00	1.00	-	-	16	100.00	0.00

Remark: [1/] Could answer more than 1 item

Dairy farming operation factors

16. Size of dairy cooperative

Large dairy cooperative: dairy cooperative has members more than 61 members such as Chiang Mai Dairy Cooperative, Chaiprakarn Dairy Cooperative, Maeon Dairy Cooperative, Maejo Dairy Cooperative, and Lamphun Dairy Cooperative total 5 Large Dairy Cooperative in Upper Northern Thailand which have dairy farmers total 598 persons. The researcher used sampling size is 171 dairy farmers. (Table 4.16)

Medium dairy cooperative: dairy cooperative has members between 21 to 60 members such as Sankampang dairy farmers groups, Ban Pa Tung-Huay Mor Dairy Cooperative, Chiang Rai Dairy Cooperative, Phatat Doi Pa Tang Dairy Cooperative, Banta Dairy Cooperative, Maelao Dairy Cooperative, Banhong samphan 1 Dairy Cooperative and Maewang Dairy Cooperative total 8 Medium Dairy Cooperative in Upper Northern Thailand which have dairy farmers total 369 persons. The researcher used sampling size is 102 dairy farmers. (Table 4.16)

Small dairy cooperative: Dairy Cooperative has members less than 20 members such as Fang Dairy Cooperative, Hariphunchai Dairy Cooperative, Maetha Dairy Cooperative, Phrae Dairy Cooperative and Long Dairy Cooperative total 5 Small Dairy Cooperatives in Upper Northern Thailand which have dairy farmers total 49 persons. The researcher used sampling size is 16 dairy farmers. (Table 4.16)

Table 4.16 Size of dairy cooperative

Size of dairy cooperative	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Small dairy farming	73	42.70	71	69.60	11	68.80	155	53.60
Medium dairy farming	98	57.30	31	30.40	5	31.20	134	46.40
Total	171	100.00	102	100.00	16	100.00	289	100.00

17. Style of dairy farming

Large dairy cooperative: It was found that the most of farmer samples have tying style of dairy farming which is averaged at 64.30% and the

secondary, leasing in cote or courtyard style of dairy farming which is averaged at 31.00% respectively**.** There are only few farmer samples have leasing in pasture style of dairy farming which is averaged at 4.70% (Table 4.17)

Medium dairy cooperative: It was found that the most of farmer samples have tying style of dairy farming which is averaged at 49.00% and the secondary, leasing in cote or courtyard style of dairy farming which is averaged at 44.10% respectively**.** There are only few farmer samples have leasing in pasture style of dairy farming which is averaged at 6.90% (Table 4.17)

Small dairy cooperative: It was found that the most of farmer samples have leasing in cote or courtyard style of dairy farming which is averaged at 50.00% and the secondary, tying style of dairy farming which is averaged at 43.80% respectively**.** There are only few farmer samples have leasing in pasture style of dairy farming which is averaged at 6.20% (Table 4.17)

Table 4.17 Style of dairy farming

Style of dairy farming	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Leasing in pasture	8	4.70	7	6.90	1	6.20	16	5.50
Leasing in cote or courtyard	53	31.00	45	44.10	8	50.00	106	36.60
Tying	110	64.30	50	49.00	7	43.80	167	64.10
Total	171	100.00	102	100.00	16	100.00	289	100.00

18. Dairy farming standard recognized from DLD

Large dairy cooperative: It was found that the most of farmer samples recognized in dairy farming standard from DLD which is averaged at 55.60% and the secondary, do not recognize in dairy farming standard from DLD which is averaged at 44.40% respectively**.** (Table 4.18)

Medium dairy cooperative: It was found that the most of farmer samples recognized in dairy farming standard from DLD which is averaged at 61.80% and the secondary, do not recognize in dairy farming standard from DLD which is averaged at 38.20% respectively**.** (Table 4.18)

Small dairy cooperative: It was found that the most of farmer samples recognized in dairy farming standard from DLD which is averaged at 62.50% and the secondary, do not recognize in dairy farming standard from DLD which is averaged at 37.50% respectively**.** (Table 4.18)

Table 4.18 Dairy farming standard recognized from DLD

Dairy farming standard recognized from DLD	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
recognize in dairy farming standard	95	55.60	63	61.80	10	62.50	168	58.10
do not recognize in dairy farming	76	44.40	39	38.20	6	37.50	121	41.90
Total	171	100.00	102	100.00	16	100.00	289	100.00

19. Number of dairy replacement (calf, growing calf and heifer) in farm

Large dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 46 dairies and minimum at 1 dairy with an average at 13.17 dairies. The most of farmer samples have number of dairy replacement between 9 – 17 dairies which is averaged at 49.10%, and the secondary, the farmer samples have number of dairy replacement is between 1 – 8 dairies which is averaged at 28.10%. There are only few farmer samples have number of dairy replacement between 36 – 44 dairies which is averaged at 0.70%. (Table 4.19)

Medium dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 41 dairies and minimum at 1 dairy with an average at 13.01 dairies. The most of farmer samples have number of dairy replacement between 9 – 17 dairies which is averaged at 62.80%, and the secondary, the farmer samples have number of dairy replacement is between 1 – 8 dairies which is averaged at 24.50%. There are only few farmer samples have number of dairy replacement between 27 – 35 dairies which is averaged at 1.00%. (Table 4.19)

Small dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 28 dairies and minimum at 4 dairies with an average at 10.50 dairies. The most of farmer samples have number of dairy replacement between 1 – 8 dairies which is averaged at 50.00%, and the secondary, the farmer samples have number of dairy replacement is between 9 – 17 dairies which

is averaged at 37.60%. There are only few farmer samples have number of dairy replacement between 18 – 26 dairies and between 27 – 35 dairies which is averaged at 6.20%. (Table 4.19)

Table 4.19 Number of dairy replacement (calf, growing calf and heifer) in farm

Number of dairy replacement (dairy)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not has dairy replacement	3	1.70	-	-	-	-	3	1.00
1 – 8	48	28.10	25	24.50	8	50.00	81	28.10
9 – 17	84	49.10	64	62.80	6	37.60	154	53.30
18 – 26	25	14.60	9	8.80	1	6.20	35	12.10
27 – 35	7	4.10	1	1.00	1	6.20	9	3.10
36 – 44	1	0.70	3	2.90	-	-	4	1.40
equivalent to or more than 45	3	1.70	-	-	-	-	3	1.00
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 46 dairy	Maximum 41 dairy	Maximum 28 dairy	Maximum 46 dairy
Minimum 1 dairy	Minimum 1 dairy	Minimum 4 dairy	Minimum 1 dairy
Mean 13.17 dairy	Mean 13.07 dairy	Mean 10.50 dairy	Mean 12.97 dairy
S.D. 8.066	S.D. 6.916	S.D. 6.928	S.D. 7.613

20. Number of dairy (milking dairy and dry dairy) in farm

Large dairy cooperative: It was found that the farmer samples have number of dairy maximum at 45 dairies and minimum at 1 dairy with an average at 17.12 dairies. The most of farmer samples have number of dairy between 1 – 17 dairies which is averaged at 56.70%, and the secondary, the farmer samples have number of dairy is between 18 – 35 dairies which is averaged at 40.90%. There are only few farmer samples do not have dairy which is averaged at 0.60%. (Table 4.20)

Medium dairy cooperative: It was found that the farmer samples have number of dairy maximum at 101 dairies and minimum at 2 dairies with an average at 16.88 dairies. The most of farmer samples have number of dairy between 1 – 17 dairies which is averaged at 60.80%, and the secondary, the farmer samples have number of dairy is between 18 – 35 dairies which is averaged at 35.30%. There are

only few farmer samples have number of dairy between 54 – 71 dairies and equivalent to or more than 90 dairies which is averaged at 1.00%. (Table 4.20)

Small dairy cooperative: It was found that the farmer samples have number of dairy maximum at 36 dairies and minimum at 5 dairies with an average at 14.50 dairies. The most of farmer samples have number of dairy between 1 – 17 dairies which is averaged at 75.00%, and the secondary, the farmer samples have number of dairy is between 18 – 35 dairies which is averaged at 18.80%. There are only few farmer samples have number of dairy between 36 – 53 dairies which is averaged at 6.20%. (Table 4.20)

Table 4.20 Number of dairy (milking dairy and dry dairy) in farm

Number of dairy (dairy)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not have dairy	1	0.60	-	-	-	-	1	0.40
1 – 17	97	56.70	62	60.80	12	75.00	171	59.10
18 – 35	70	40.90	36	35.30	3	18.80	109	37.60
36 – 53	3	1.80	2	1.90	1	6.20	6	2.10
54 – 71	-	-	1	1.00	-	-	1	0.40
72 – 89	-	-	-	-	-	-	-	-
equivalent to or more than 90	-	-	1	1.00	-	-	1	0.40
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 45 dairy	Maximum101dairy	Maximum 36 dairy	Maximum101dairy
Minimum 1 dairy	Minimum 2 dairy	Minimum 5 dairy	Minimum 1 dairy
Mean 17.12 dairy	Mean 16.88 dairy	Mean 14.50 dairy	Mean 16.89 dairy
S.D. 7.772	S.D. 11.630	S.D. 9.302	S.D. 9.383

21. Capability on milk production of dairy (kg./dairy/day)

Large dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 20.83 kg./dairy/day and minimum at 6.40 kg./dairy/day with an average at 10.82 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 8.33 – 11.46 kg./dairy/day which is averaged at 49.70%, and the secondary span of capability on

milk production of dairy is between 11.47 – 14.60 kg./dairy/day which is averaged at 29.20%. There are only few farmer samples have capability on milk production of dairy equivalent to or more than 17.75 kg./dairy/day which is averaged at 0.60%. (Table 4.21)

Medium dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 18.57 kg./dairy/day and minimum at 6.00 kg./dairy/day with an average at 10.57 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 8.33 – 11.46 kg./dairy/day which is averaged at 60.80%, and the secondary span of capability on milk production of dairy is between 11.47 – 14.60 kg./dairy/day which is averaged at 27.40%. There are only few farmer samples have capability on milk production of dairy between 14.61 – 17.74 kg./dairy/day and equivalent to or more than 17.75 kg./dairy/day which is averaged at 1.00%. (Table 4.21)

Small dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 18.75 kg./dairy/day and minimum at 5.17 kg./dairy/day with an average at 10.38 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 5.17 – 8.32, 8.33 – 11.46 and 11.47 – 14.60 kg./dairy/day which is averaged at 31.20%, and the secondary span of capability on milk production of dairy is between 14.61 – 17.74 kg./dairy/day which is averaged at 6.40%. (Table 4.21)

Table 4.21 Capability on milk production of dairy (kg./dairy/day)

Capability on milk production of dairy (kg./dairy/day)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
5.17 – 8.32	26	15.20	10	9.80	5	31.20	41	14.10
8.33 – 11.46	85	49.70	62	60.80	5	31.20	152	52.60
11.47 – 14.60	50	29.20	28	27.40	5	31.20	83	28.70
14.61 – 17.74	9	5.30	1	1.00	1	6.40	11	3.80
equivalent to or more than 17.75	1	0.60	1	1.00	-	-	2	0.80
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 20.83 kg/dairy/day	Maximum 18.57 kg/dairy/day	Maximum 18.75 kg/dairy/day	Maximum 20.83 kg/dairy/day
Minimum 6.40 kg/dairy/day	Minimum 6.00 kg/dairy/day	Minimum 5.17 kg/dairy/day	Minimum 5.17 kg/dairy/day
Mean 10.82 kg/dairy/day	Mean 10.57 kg/dairy/day	Mean 10.38 kg/dairy/day	Mean 10.71 kg/dairy/day
S.D. 2.278	S.D. 1.823	S.D. 3.116	S.D. 2.180

22. Purchase price of raw milk (baht / kg.)

Large dairy cooperative: It was found that the farmer samples is offered a purchase price of raw milk maximum at 18.10 Baht/kg. and minimum at 13.00 baht/kg. with an average at 15.97 Baht/kg. The most of farmer samples is offered a purchase price of raw milk between 14.89 – 16.51 Baht/kg. which is averaged at 95.90%, and the secondary, the farmer samples is offered a purchase price of raw milk is between 16.52 – 18.14 Baht/kg which is averaged at 1.70%. There are only few farmer samples is offered a purchase price of raw milk between 11.63 – 13.25 and 13.26 – 14.88 Baht/kg which is averaged at 1.20%. (Table 4.22)

Medium dairy cooperative: It was found that the farmer samples is offered a purchase price of raw milk maximum at 17.00 Baht/kg. and minimum at 10.00 Baht/kg. with an average at 15.64 Baht/kg. The most of farmer samples is offered a purchase price of raw milk between 14.89 – 16.51 Baht/kg. which is averaged at 88.20%, and the secondary, the farmer samples is offered a purchase price of raw milk is between 11.63 – 13.25 Baht/kg which is averaged at 6.90%. There are only few farmer samples is offered a purchase price of raw milk between 16.52 – 18.14 Baht/kg which is averaged at 0.90%. (Table 4.22)

Small dairy cooperative: It was found that the farmer samples is offered a purchase price of raw milk maximum at 16.50 Baht/kg. and minimum at 10.00 baht/kg. with an average at 13.90 Baht/kg. The most of farmer samples is offered a purchase price of raw milk between 14.89 – 16.51 Baht/kg. which is averaged at 62.60%, and the secondary, the farmer samples is offered a purchase price of raw milk is between 10.00 – 11.62 Baht/kg which is averaged at 31.20%. There are only few farmer samples is offered a purchase price of raw milk between 11.63 – 13.25 Baht/kg which is averaged at 6.20%. (Table 4.22)

Table 4.22 Purchase price of raw milk (Baht / kg.)

Purchase price of raw milk (Baht / kg.)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
10.00 – 11.62	-	-	2	2.00	5	31.20	7	2.40
11.63 – 13.25	2	1.20	7	6.90	1	6.20	10	3.50
13.26 – 14.88	2	1.20	2	2.00	-	-	4	1.40
14.89 – 16.51	164	95.90	90	88.20	10	62.60	264	91.40
16.52 – 18.14	3	1.70	1	0.90	-	-	4	1.30
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC	MDC	SDC	Total
Maximum 18.10 Baht/kg.	Maximum 17.00 Baht/kg.	Maximum 16.50 Baht/kg.	Maximum 18.10 Baht/kg.
Minimum 13.00 Baht/kg.	Minimum 10.00 Baht/kg.	Minimum 10.00 Baht/kg.	Minimum 10.00 Baht/kg.
Mean 15.97 Baht/kg.	Mean 15.64 Baht/kg.	Mean 13.90 Baht/kg.	Mean 15.74 Baht/kg.
S.D. 0.559	S.D. 1.188	S.D. 2.909	S.D. 1.160

23. Farm land owning for dairy farming

Large dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 47.00 Rai and minimum at 0.25 Rai with an average at 6.61 Rai. The most of farmer samples have farm land for dairy farming less than or equivalent to 9.00 Rai which is averaged at 74.30%, and the secondary, the farmer samples have farm land for dairy farming is between 9.10 – 18.00 Rai which is averaged at 18.10%. There are only few farmer samples have farm land for dairy farming equivalent to or more than 45.10 Rai which is averaged at 0.60%. (Table 4.23)

Medium dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 32.00 Rai and minimum at 0.50 Rai with an average at 6.22 Rai. The most of farmer samples have farm land for dairy farming less than or equivalent to 9.00 Rai which is averaged at 80.40%, and the secondary the farmer samples have farm land for dairy farming is between 9.10 – 18.00 Rai which is averaged at 14.70%. There are only few farmer samples have farm land for dairy farming is between 18.10 – 27.00 Rai which is averaged at 2.00%. (Table 4.23)

Small dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 26.00 Rai and minimum at 2.00 Rai with an average at 8.72 Rai. The most of farmer samples have farm land for dairy farming less than or equivalent to 9.00 Rai which is averaged at 62.00%, and the secondary the

farmer samples have farm land for dairy farming is between 9.10 – 18.00 Rai and 18.10 – 27.00 Rai which is averaged at 18.70%. (Table 4.23)

Table 4.23 Farm land owning for dairy farming

Farm land owning for dairy farming	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
(Rai)	No.	%	No.	%	No.	%	No.	%
less than or equivalent 9.00	127	74.30	82	80.40	10	62.60	219	75.80
9.10 – 18.00	31	18.10	15	14.70	3	18.70	49	17.00
18.10 – 27.00	8	4.70	2	2.00	3	18.70	13	4.50
27.10 – 36.00	4	2.30	3	2.90	-	-	7	2.40
36.10 – 45.00	-	-	-	-	-	-	-	-
equivalent to or more than 45.10	1	0.60	-	-	-	-	1	0.30
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC		MDC		SDC		Total	
Maximum	47.00 Rai	Maximum	32.00 Rai	Maximum	26.00 Rai	Maximum	47.00 Rai
Minimum	0.25 Rai	Minimum	0.55 Rai	Minimum	2.00 Rai	Minimum	0.25 Rai
Mean	6.61 Rai	Mean	6.22 Rai	Mean	8.72 Rai	Mean	6.58 Rai
S.D.	6.977	S.D.	6.061	S.D.	6.846	S.D.	6.661

24. Size of area for pasture

Large dairy cooperative: It was found that the farmer samples have area for pasture maximum at 45.00 Rai and minimum at 0.50 Rai with an average at 6.28 Rai. The most of farmer samples have area for pasture less than or equivalent to 7.00 Rai which is averaged at 67.30%, and the secondary span of size of area for pasture is between 7.01 – 14.00 Rai which is averaged at 17.00%. There are only few farmer samples have area for pasture is between 28.01 – 35.00 Rai and equivalent to or more than 35.01 Rai which is averaged at 0.60%. (Table 4.24)

Medium dairy cooperative: It was found that the farmer samples have area for pasture maximum at 30.00 Rai and minimum at 0.50 Rai with an average at 6.04 Rai. The most of farmer samples have area for pasture less than or equivalent to 7.00 Rai which is averaged at 69.60%, and the secondary span of size of area for pasture is between 7.01 – 14.00 Rai which is averaged at 12.60%. There are only few

farmer samples have area for pasture is between 14.01 – 21.00 Rai, 21.01 – 28.00 Rai and 28.01 – 35.00 Rai which is averaged at 2.00%. (Table 4.24)

Small dairy cooperative: It was found that the farmer samples have area for pasture maximum at 25.00 Rai and minimum at 1.00 Rai with an average at 8.30 Rai. The most of farmer samples have area for pasture less than or equivalent to 7.00 Rai which is averaged at 50.00%, and the secondary span of size of area for pasture is between 7.01 – 14.00 Rai which is averaged at 25.00%. There are only few farmer samples do not have and have area for pasture is between 21.01 – 28.00 Rai which is averaged at 6.25%. (Table 4.24)

Table 4.24 Size of area for pasture

Size of area for pasture (Rai)	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Do not have pasture	19	11.10	12	11.80	1	6.25	32	11.10
Less than or equivalent 7.00	110	64.30	71	69.60	8	50.00	189	65.40
7.01 – 14.00	29	17.00	13	12.60	4	25.00	46	15.90
14.01 – 21.00	8	4.70	2	2.00	2	12.50	12	4.10
21.01 – 28.00	3	1.70	2	2.00	1	6.25	6	2.10
28.01 – 35.00	1	0.60	2	2.00	-	-	3	1.00
equivalent to or more than 35.01	1	0.60	-	-	-	-	1	0.40
Total	171	100.00	102	100.00	16	100.00	289	100.00

LDC		MDC		SDC		Total	
Maximum	45.00 Rai	Maximum	30.00 Rai	Maximum	25.00 Rai	Maximum	45.00 Rai
Minimum	0.50 Rai	Minimum	0.50 Rai	Minimum	1.00 Rai	Minimum	0.50 Rai
Mean	6.28 Rai	Mean	6.04 Rai	Mean	8.30 Rai	Mean	6.32 Rai
S.D.	6.465	S.D.	5.767	S.D.	6.917	S.D.	6.252

25. Cognizance in operating of dairy cooperative

Large dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in members must have a sense of ownership in dairy cooperative. It can be evidenced by the questionnaire that they chose the correct answer 97.08%. The secondary issue is cooperative would support member to help each other in which they chose the correct answer 96.49%. The less cognizance issue is member have to trust in cooperative management of the

committee therefore operate of cooperative will smooth that they chose the wrong answer 96.49%. (Table 4.25)

In addition, it also found that the farmer samples have cognizance in operating of dairy cooperative averaged at 5.16 score which is in a medium level (3.34 – 6.67 scores). The most of farmer samples have medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 56.30%. The secondary group who has high level of cognizance in operating of dairy cooperative (more than 6.67 scores) is averaged at 23.40%. And the minority group who has low level of cognizance in operating of dairy cooperative (less than 3.34 scores) is averaged at 19.30%. In this research, it also discovered that the farmer samples of large dairy cooperative gained lowest cognizance in operating of dairy cooperative at 2 scores and the highest at 9 scores**.**

Medium dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in cooperative would support member to help each other. It can be evidenced by the questionnaire that they chose the correct answer 96.08%. The secondary issue is members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative in which they chose the correct answer 92.16%. The less cognizance issue is member have to trust in cooperative management of the committee therefore operate of cooperative will smooth that they chose the wrong answer 96.08%. (Table 4.25)

In addition, it also found that the farmer sample has cognizance in operating of dairy cooperative averaged at 5.28 score which is in a medium level (3.34 – 6.67 scores). The most of farmer samples have medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 74.50%. The secondary group who has high level of cognizance in operating of dairy cooperative (more than 6.67 scores) is averaged at 18.60%. And the minority group who has low level of cognizance in operating of dairy cooperative (less than 3.34 scores) is averaged at 6.90%. In this research, it also discovered that the farmer samples of medium dairy cooperative gained lowest cognizance in operating of dairy cooperative at 2 scores and the highest at 9 scores.

Small dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in cooperative would support

member to help each other. It can be evidenced by the questionnaire that they chose the correct answer 93.75%. The secondary issue is members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative in which they chose the correct answer 87.50%. The less cognizance issue is management of cooperative originate from decision of executive, committee and cooperative officer only and member have to trust in cooperative management of the committee therefore operate of cooperative will smooth that they chose the wrong answer 87.50%. (Table 4.25)

In addition, it also found that the farmer samples have cognizance in operating of dairy cooperative averaged at 4.38 score which is in a medium level (3.34 – 6.67 scores). The most of farmer sample has medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 75.00%. And the minority group who has low level of cognizance in operating of dairy cooperative (less than 3.34 scores) is averaged at 25.00%. In this research, it also discovered that the farmer samples of small dairy cooperative gained lowest cognizance in operating of dairy cooperative at 3 scores and the highest at 6 scores.

Table 4.25 Cognizance in operating of dairy cooperative

Cognizance in operating of dairy cooperative	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Objective of cooperative are transaction as much as possible	65	38.01	106	61.99	44	43.14	58	56.86	8	50.00	8	50.00
2. Dairy cooperative pay attention in member accretion than capital increment	98	57.31	73	42.69	77	75.49	25	24.51	6	37.50	10	62.50
3. Member of cooperative have right to participate in operation planning of cooperative	152	88.89	19	11.11	93	91.18	9	8.82	13	81.25	3	18.75
4. Management of cooperative originate from decision of executive, committee and cooperative officer only	64	37.43	107	62.57	39	38.24	63	61.76	2	12.50	14	87.50
5. Dairy farming cooperative share profit to member up to their share quantity only example high share receive high dividend	15	8.77	156	91.23	18	17.65	84	82.35	3	18.75	13	81.25
6. Members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative	166	97.08	5	2.92	94	92.16	8	7.84	14	87.50	2	12.50

Table 4.25 Cognizance in operating of dairy cooperative (continue)

Cognizance in operating of dairy cooperative	LDC (n = 171)				LDC (n = 171)				LDC (n = 171)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7. Achievement of cooperative depend on capital of cooperative	59	34.50	112	65.50	29	28.43	73	71.57	4	25.00	12	75.00
8. Price of share are variable and depend economical condition	92	53.80	79	46.20	43	42.16	59	57.84	3	18.75	13	81.25
9. Member have to trust in cooperative management of the committee therefore operate of cooperative will smooth	6	3.51	165	96.49	4	3.92	98	96.08	2	12.50	14	87.50
10. Cooperative would support member to help each other	165	96.49	6	3.51	98	96.08	4	3.92	15	93.75	1	6.25

Remark Divide level of dairy farmers' cognizance in operating of dairy cooperative in upper northern Thailand total 3 levels including

Cognizance in operating of dairy cooperative in low level. (0.00 – 3.33 score)
Cognizance in operating of dairy cooperative in medium level. (3.34 – 6.67 score)
Cognizance in operating of dairy cooperative in high level.(6.68- 10.00 score)

Summarize the score of cognizance in operating of dairy cooperative	LDC		MDC		SDC	
	No.	%	No.	%	No.	%
Score of cognizance (Total 10 score)						
Cognizance in low level. (0.00 – 3.33 score)	33	19.30	7	6.90	4	25.00
Cognizance in medium level. (3.34 – 6.67 score)	98	57.30	76	74.50	12	75.00
Cognizance in high level. (6.68- 10.00 score)	40	23.40	19	18.60	-	-
Total	171	100.00	102	100.00	16	100.00

	LDC	MDC	SDC
Score Maximum	9	9	6
Score Minimum	2	2	3
Score Mean	5.16	5.28	4.38
Standard Deviation	1.690	1.430	1.020

26. Satisfaction to dairy cooperative operation

Large dairy cooperative

It was found that satisfaction to dairy cooperative operation in high level towards standard in raw milk purchase from member ($\overline{X}$ = 3.23), rule and regulation of cooperative ($\overline{X}$ = 3.22), dairy cooperative management structure ($\overline{X}$ = 3.16), finance controlling and inspecting system ($\overline{X}$ = 3.13), satisfaction in administration of dairy cooperative ($\overline{X}$ = 3.12), working of cooperative officer ($\overline{X}$ = 3.10), decentralize in duty and responsibility of each division ($\overline{X}$ = 3.09), transparency management of executive, committees and officers ($\overline{X}$ = 3.06), administration of the executive/committee ($\overline{X}$ = 3.05), coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 3.05), policy and work plan in cooperative management ($\overline{X}$ = 3.04), unity in member group ($\overline{X}$ = 3.01), reporting of overall operation to member ($\overline{X}$ = 2.87), offer an opportunity to member to participate in every administration procedure ($\overline{X}$ = 2.80) and participation in cooperative management planning ($\overline{X}$ = 2.67) respectively (Table 4.26)

As a whole, the farmer samples of large dairy cooperative have satisfaction to dairy cooperative operation in high level. ($\overline{X}$ = 3.04)

Medium dairy cooperative

It was found that satisfaction to dairy cooperative operation in highest level towards standard in raw milk purchase from member ($\overline{X}$ = 3.29) (Table 4.26)

Satisfaction to dairy cooperative operation in high level towards unity in member group ($\overline{X}$ = 3.25), satisfaction in administration of dairy cooperative ($\overline{X}$ = 3.23), transparency management of executive, committees and officers ($\overline{X}$ = 3.20), finance controlling and inspecting system ($\overline{X}$ = 3.09), policy and work plan in cooperative management ($\overline{X}$ = 3.07), working of cooperative officer ($\overline{X}$ = 3.07), decentralize in duty and responsibility of each division ($\overline{X}$ = 3.06), dairy cooperative management structure ($\overline{X}$ = 3.02), administration of the executive/committee ($\overline{X}$ = 3.01), rule and regulation of cooperative ($\overline{X}$ = 3.00), coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 3.00), reporting of overall operation to member ($\overline{X}$ = 2.95), offer an opportunity to member to participate in every administration procedure ($\overline{X}$ = 2.81) and participation in cooperative management planning ($\overline{X}$ = 2.76) respectively. (Table 4.26)

As a whole, the farmer samples of medium dairy cooperative have satisfaction to dairy cooperative operation in high level ($\overline{X}$ = 3.05)

Small dairy cooperative

It was found that satisfaction to dairy cooperative operation in highest level towards unity in member group ($\overline{X}$ = 3.44) and participation in cooperative management planning ($\overline{X}$ = 3.31) respectively.(Table 4.26)

It was found that satisfaction to dairy cooperative operation in high level towards transparency management of executive, committees and officers ($\overline{X}$ = 3.19), offer an opportunity to member to participate in every administration procedure ($\overline{X}$ = 3.19), satisfaction in administration of dairy cooperative ($\overline{X}$ = 3.13),

finance controlling and inspecting system ($\overline{X}$ = 2.88), administration of the executive/committee ($\overline{X}$ = 2.88), policy and work plan in cooperative management ($\overline{X}$ = 2.75), reporting of overall operation to member ($\overline{X}$ = 2.63) and working of cooperative officer ($\overline{X}$ = 2.56) respectively. (Table 4.26)

It was found that satisfaction to dairy cooperative operation in low level towards standard in raw milk purchase from member ($\overline{X}$ = 2.50), coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 2.50), rule and regulation of cooperative ($\overline{X}$ = 2.44), decentralize in duty and responsibility of each division ($\overline{X}$ = 2.38) and Dairy Cooperative management structure respectively. (Table 4.26)

As a whole, the farmer samples of small dairy cooperative have satisfaction to dairy cooperative operation in high level. ($\overline{X}$ = 2.80)

Table 4.26 Satisfaction to dairy cooperative operation

Satisfaction to dairy cooperative operation	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Policy and work plan in cooperative management	3.04	0.56	High	3.07	0.62	High	2.75	0.77	High
2. Participation in cooperative management planning	2.67	0.80	High	2.76	0.69	High	3.31	0.95	Highest
3. Dairy cooperative management structure	3.16	0.61	High	3.02	0.66	High	2.25	0.93	Low
4. Decentralize in duty and responsibility of each division	3.09	0.65	High	3.06	0.63	High	2.38	0.89	Low
5. Administration of the executive/committee	3.05	0.77	High	3.01	0.59	High	2.88	0.72	High
6. Working of cooperative officer	3.10	0.53	High	3.07	0.57	High	2.56	0.73	High
7. Rule and regulation of cooperative	3.22	0.61	High	3.00	0.61	High	2.44	0.81	Low
8. Standard in raw milk purchase from member	3.23	0.68	High	3.29	0.59	Highest	2.50	0.97	Low
9. Coordination between cooperative, milk factories, academy and government officer in dairy farming	3.05	0.66	High	3.00	0.70	High	2.50	0.73	Low
10. Unity in member group	3.01	0.72	High	3.25	0.61	High	3.44	0.63	Highest
11. Reporting of overall operation to member	2.87	0.70	High	2.95	0.79	High	2.63	0.89	High
12. Transparency management of executive, committees and officers	3.06	0.72	High	3.20	0.65	High	3.19	0.83	High
13. Finance Controlling and Inspecting system	3.13	0.69	High	3.09	0.72	High	2.88	0.81	High

Table 4.26 Satisfaction to dairy cooperative operation (continue)

Satisfaction to dairy cooperative operation	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
14. Offer an opportunity to member to participate in every administration procedure	2.80	0.80	High	2.81	0.82	High	3.19	0.91	High
15. Your satisfaction in administration of Dairy Cooperative	3.12	0.66	High	3.23	0.51	High	3.13	0.62	High
Total	**3.04**	**0.45**	**High**	**3.05**	**0.42**	**High**	**2.80**	**0.51**	**High**

Remark Divide level of dairy farmers' satisfaction with dairy cooperative operation in upper northern Thailand total 4 levels including

Satisfaction with dairy cooperative operation in lowest level. (1.00 – 1.75 score)

Satisfaction with dairy cooperative operation in low level. (1.76 – 2.51 score)

Satisfaction with dairy cooperative operation in high level. (2.52 – 3.27 score)

Satisfaction with dairy cooperative operation in the highest level. (3.28 – 4.00 score)

27. Satisfaction in operation of government officer concerning dairy farming

Large dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in highest level towards human relation ($\overline{X}$ = 3.48), vaccination service ($\overline{X}$ = 3.42), suitability of communication opportunity ($\overline{X}$ = 3.41) and Artificial insemination service ($\overline{X}$ = 3.35) respectively. (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in high level towards responsibility to duty and on time ($\overline{X}$ = 3.22), animal treatment service ($\overline{X}$ = 3.21), annually blood sampling ($\overline{X}$ = 3.18), knowledge transmission of officer ($\overline{X}$ = 3.14), suitability of service charge ($\overline{X}$ = 3.10), counseling service ($\overline{X}$ = 3.08), suitability of equipment ($\overline{X}$ = 3.08) and suitability of officer number with animal number ($\overline{X}$ = 2.77) respectively. (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in low level towards deliver service in hard case ($\overline{X}$ = 2.39). (Table 33)

Satisfaction in operation of government officer concerning dairy farming in lowest level towards autopsy service ($\overline{X}$ = 1.47). (Table 4.27)

As a whole, the farmer samples of large dairy cooperative have satisfaction in operation of government officer concerning dairy farming in high level. ($\overline{X}$ = 3.02)

Medium dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in high level towards human relation ($\overline{X}$ = 3.25), annually blood sampling ($\overline{X}$ = 3.15), artificial insemination service ($\overline{X}$ = 3.13), suitability of communication opportunity ($\overline{X}$ = 3.11), vaccination service ($\overline{X}$ = 3.09), suitability of equipment ($\overline{X}$ = 3.00), suitability of service charge ($\overline{X}$ = 2.97), knowledge transmission of officer ($\overline{X}$ = 2.93), counseling service ($\overline{X}$ = 2.91), responsibility to duty and on time ($\overline{X}$ = 2.90), animal treatment service ($\overline{X}$ = 2.77),

deliver service in hard case ($\overline{X}$ = 2.55) and suitability of officer number with animal number ($\overline{X}$ = 2.55) respectively. (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in lowest level towards autopsy service ($\overline{X}$ = 1.70). (Table 4.27)

As a whole, the farmer samples of medium dairy cooperative have satisfaction in operation of government officer concerning dairy farming in high level. ($\overline{X}$ = 2.86)

Small dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in highest level towards vaccination service ($\overline{X}$ = 3.50) and suitability of communication opportunity ($\overline{X}$ = 3.44). (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in high level towards annually blood sampling ($\overline{X}$ = 3.25), human relation ($\overline{X}$ = 3.13), Artificial Insemination service ($\overline{X}$ = 2.94), suitability of service charge ($\overline{X}$ = 2.75), responsibility to duty and on time ($\overline{X}$ = 2.75), counseling service ($\overline{X}$ = 2.63) and knowledge transmission of officer ($\overline{X}$ = 2.63) respectively. (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in low level towards animal treatment service ($\overline{X}$ = 2.44), suitability of equipment ($\overline{X}$ = 2.38), suitability of officer number with animal number ($\overline{X}$ = 2.06) and deliver service in hard case ($\overline{X}$ = 2.00) respectively. (Table 4.27)

Satisfaction in operation of government officer concerning dairy farming in lowest level towards autopsy service ($\overline{X}$ = 1.50). (Table 4.27)

As a whole, the farmer samples of small dairy cooperative have satisfaction in operation of government officer concerning dairy farming in high level ($\overline{X}$ = 2.67).

Table 4.27 Satisfaction in operation of government officer concerning dairy farming

Satisfaction in operation of government officer concerning dairy farming	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Artificial insemination service	3.35	0.60	Highest	3.13	0.66	High	2.94	0.68	High
2. Animal treatment service	3.21	0.64	High	2.77	0.73	High	2.44	0.89	Low
3. Vaccination service	3.42	0.63	Highest	3.09	0.75	High	3.50	0.52	Highest
4. Annually Blood sampling	3.18	0.73	High	3.15	0.75	High	3.25	0.58	High
5. Counseling service	3.08	0.66	High	2.91	0.75	High	2.63	0.89	High
6. deliver service in hard case	2.39	0.85	Low	2.55	0.89	High	2.00	0.89	Low
7. Autopsy service	1.47	0.81	Highest	1.70	0.81	Lowest	1.50	0.73	Lowest
8. Suitability of service charge	3.10	0.66	High	2.97	0.70	High	2.75	0.86	High
9. Suitability of communication opportunity	3.41	0.60	Highest	3.11	0.64	High	3.44	0.51	Highest
10. Suitability of officer number with animal number	2.77	0.83	High	2.55	0.96	High	2.06	0.93	Low
11. Suitability of equipment	3.08	0.64	High	3.00	0.64	High	2.38	0.72	Low
12. Knowledge Transmission of officer	3.14	0.62	High	2.93	0.65	High	2.63	0.81	High
13. Responsibility to duty and on time	3.22	0.63	High	2.90	0.74	High	2.75	0.93	High
14. Human relation	3.48	0.52	Highest	3.25	0.55	High	3.13	0.72	High
Total	**3.02**	**0.39**	**High**	**2.86**	**0.42**	**High**	**2.67**	**0.45**	**High**

Remark Divide level of dairy farmers' satisfaction in operation of government officer concerning dairy farming in upper northern Thailand total 4 levels including

Satisfaction in operation of government officer concerning dairy farming in lowest level. (1.00 – 1.75 score)

Satisfaction in operation of government officer concerning dairy farming in low level. (1.76 – 2.51 score)

Satisfaction in operation of government officer concerning dairy farming in high level. (2.52 – 3.27 score)

Satisfaction in operation of government officer concerning dairy farming in the highest level.(3.28 – 4.00 score)

28. Satisfaction in earn a living by dairy farming

Large dairy cooperative

It was found that satisfaction in earn a living by dairy farming in highest level towards time to spend with family ($\overline{X}$ = 3.34) and security in dairy farming occupation ($\overline{X}$ = 3.30) respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in high level towards happy in dairy farming occupation ($\overline{X}$ = 3.27), dairy breed deploy in present ($\overline{X}$ = 3.04), dignity and respect from community ($\overline{X}$ = 2.84) and return from raw milk selling ($\overline{X}$ = 2.68) respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in low level towards government policy to support dairy farmer ($\overline{X}$ = 2.26), milk production cost in present ($\overline{X}$ = 2.00) and milk consumption rate in country (11.5 L/person/year) ($\overline{X}$ = 1.76). respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in lowest level towards opening the Free Trade Area (FTA) ($\overline{X}$ = 1.55) respectively. (Table 34)

As a whole, the farmer samples of large dairy cooperative have satisfaction in earn a living by dairy farming in high level ($\overline{X}$ = 2.61).

Medium dairy cooperative

It was found that satisfaction in earn a living by dairy farming in highest level towards security in dairy farming occupation ($\overline{X}$ = 3.30). (Table 34)

Satisfaction in earn a living by dairy farming in high level towards happy in dairy farming occupation ($\overline{X}$ = 3.25), time to spend with family ($\overline{X}$ = 3.22), dairy breed deploy in present ($\overline{X}$ = 3.06), dignity and respect from community ($\overline{X}$ = 3.05) and return from raw milk selling ($\overline{X}$ = 2.84) respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in low level towards government policy to support dairy farmer ($\overline{X}$ = 2.38), milk production Cost in present ($\overline{X}$ = 2.21), milk consumption rate in country (11.5 L/person/year)

($\overline{X}$ = 2.02) and opening the Free Trade Area (FTA) ($\overline{X}$ = 1.80) respectively. (Table 4.28)

As a whole, the farmer samples of medium dairy cooperative have satisfaction in earn a living by dairy farming in high level ($\overline{X}$ = 2.71).

Small dairy cooperative

It was found that satisfaction in earn a living by dairy farming in highest level towards time to spend with family ($\overline{X}$ = 3.56). (Table 34)

Satisfaction in earn a living by dairy farming in high level towards happy in dairy farming occupation ($\overline{X}$ = 3.00), security in dairy farming occupation ($\overline{X}$ = 2.75) and dairy breed deploy in present ($\overline{X}$ = 2.69) respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in low level towards dignity and respect from community ($\overline{X}$ = 2.50), return from raw milk selling ($\overline{X}$ = 2.31) and government policy to support dairy farmer ($\overline{X}$ = 2.06) respectively. (Table 4.28)

Satisfaction in earn a living by dairy farming in lowest level towards milk production cost in present ($\overline{X}$ = 1.56), milk consumption rate in country (11.5 L/person/year) ($\overline{X}$ = 1.56) and opening the Free Trade Area (FTA) ($\overline{X}$ = 1.31) respectively. (Table 4.28)

As a whole, the farmer samples of small dairy cooperative have satisfaction in earn a living by dairy farming in low level ($\overline{X}$ = 2.33).

Table 4.28 Satisfaction in earn a living by dairy farming

Satisfaction in earn a living by dairy farming	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Dairy breed deploy in present	3.04	0.70	High	3.06	0.61	High	2.69	0.70	High
2. Milk production cost in present	2.00	0.66	Low	2.21	0.78	Low	1.56	0.51	Lowest
3. Return from raw milk selling	2.68	0.64	High	2.84	0.64	High	2.31	0.87	Low
4. Security in dairy farming occupation	3.30	0.57	Highest	3.30	0.58	Highest	2.75	0.86	High
5. Time to spend with family	3.34	0.54	Highest	3.22	0.52	High	3.56	0.51	Highest
6. Dignity and respect from community	2.84	0.73	High	3.05	0.71	High	2.50	0.82	Low
7. Government Policy to support dairy farmer	2.26	0.86	Low	2.38	0.82	Low	2.06	0.85	Low
8. Milk Consumption rate in country (11.5 L/person/year)	1.76	0.77	Low	2.02	0.84	Low	1.56	0.81	Lowest
9. Opening the Free Trade Area (FTA)	1.55	0.69	Lowest	1.80	0.77	Low	1.31	0.70	Lowest
10. You are happy in dairy farming occupation	3.27	0.53	High	3.25	0.64	High	3.00	0.37	High
Total	**2.60**	**0.33**	**High**	**2.71**	**0.33**	**High**	**2.33**	**0.39**	**Low**

Remark Divide level of dairy farmers' satisfaction in earn a living by dairy farming in upper northern Thailand total 4 levels including

Satisfaction in earn a living by dairy farming in lowest level. (1.00 – 1.75 score)

Satisfaction in earn a living by dairy farming in low level. (1.76 – 2.51 score)

Satisfaction in earn a living by dairy farming in high level. (2.52 – 3.27 score)

Satisfaction in earn a living by dairy farming in the highest level.(3.28 – 4.00 score)

29. Opinion of dairy farmer in career succession of their child

Large dairy cooperative: It was found that the most of farmer samples have opinion that child will not take succession from their which is averaged at 54.40% and have opinion that child will take succession from their which is averaged at 45.60%. (Table 4.29)

Medium dairy cooperative: It was found that the most of farmer samples have opinion that child will not take succession from their which is averaged at 63.70% and have opinion that child will take succession from their which is averaged at 36.60%. (Table 4.29)

Small dairy cooperative: It was found that the most of farmer samples have opinion that child will not take succession from their which is averaged at 68.80% and have opinion that child will take succession from their which is averaged at 31.20%. (Table 4.29)

Table 4.29 Opinion of dairy farmer in career succession of their child.

Opinion of dairy farmer in career succession of their child	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Take succession	78	45.60	37	36.30	5	31.20	120	41.50
Not take succession	93	54.40	65	63.70	11	68.80	169	58.50
Total	171	100.00	102	100.00	16	100.00	289	100.00

30. Problem and obstacle in dairy farming (physical aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of insufficient area for dairy farming which is averaged at 95.30% . The secondary a problem and obstacle is unsuitable climate which is averaged at 78.90%. There are only few farmer samples who have a problem and obstacle of inconvenient transportation which is averaged at 20.50%. (Table 4.30)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of insufficient area for dairy farming which is averaged at 91.20% . The secondary a problem and obstacle is unsuitable climate which is averaged at 72.50% . There are only few farmer sample who have a

problem and obstacle of far from milk collecting center of cooperative which is averaged at 20.60%. (Table 4.30)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of insufficient area for dairy farming which is averaged at 81.20% . The secondary a problem and obstacle is unsuitable climate which is averaged at 62.50% . There are only few farmer samples who have a problem and obstacle of inconvenient transportation which is averaged at 25.00%. (Table 4.30)

31. Problem and obstacle in dairy farming (economic aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive land, they couldn't expand the farm which is averaged at 91.20% . The secondary a problem and obstacle is income from dairy farming which is insufficient and averaged at 86.00%. There are only few farmer samples who have a problem and obstacle of high tax of Sub - District Administration Organization which is averaged at 31.00%. (Table 4.30)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle is income from dairy farming which is insufficient and averaged at 89.20% . The secondary a problem and obstacle is lack of capital supporting from government which is averaged at 81.40%. There are only few farmer samples who have a problem and obstacle of high tax of Sub - District Administration Organization which is averaged at 40.20%. (Table 4.30)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle is income from dairy farming which is insufficient and averaged at 93.70% . The secondary a problem and obstacle are expensive land, they couldn't expand the farm and lack of capital supporting from government which is averaged at 87.50%. There are only few farmer samples who have a problem and obstacle of high tax of Sub - District Administration Organization which is averaged at 25.00%. (Table 4.30)

32. Problem and obstacle in dairy farming (social aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle are lack of information in dairy farming and

lack of contact with government officer which is averaged at 95.90% . The secondary a problem and obstacle is lack of dairy farming training which is averaged at 78.90%. There are only few farmer samples who have a problem and obstacle of rule regulation of municipality which is averaged at 25.70%. (Table 4.30)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle is lack of contact with government officer which is averaged at 96.10% . The secondary a problem and obstacle is lack of information in dairy farming which is averaged at 92.20%. There are only few farmer samples who have a problem and obstacle of community not admit dairy farming (pollution from waste water, feces) which is averaged at 26.50%. (Table 4.30)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle is lack of information in dairy farming which is averaged at 93.70% . The secondary a problem and obstacle is lack of contact with government officer which is averaged at 81.30%. There are only few farmer samples who have a problem and obstacle of community not admit dairy farming (pollution from waste water, feces) which is averaged at 12.50%. (Table 4.30)

33. Problem and obstacle in dairy farming (farm operating aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive concentrate feed which is averaged at 100.00%. The secondary a problem and obstacle is lack of pasture which is averaged at 95.30%. There are only few farmer samples who have a problem and obstacle of less experience in dairy farming which is averaged at 53.20%. (Table 4.30)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive concentrate feed which is averaged at 100.00%. The secondary a problem and obstacle is lack of pasture which is averaged at 98.00%. There are only few farmer samples who have a problem and obstacle of less experience in dairy farming which is averaged at 49.00%. (Table 4.30)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive concentrate feed which is averaged

at 100.00%. The secondary a problem and obstacle are price of a raw milk were low and expensive fuel which is averaged at 87.50%. There are only few farmer samples who have a problem and obstacle is animal got chronic disease which is averaged at 43.70%. (Table 4.30)

Table 4.30 Problem and obstacle in dairy farming

Problem and obstacle	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Has problem		Non - problem		Has problem		Non - problem		Has problem		Non - problem	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Physical aspect												
1. Topography not suitable to dairy farming such as tidal flat ,bank etc.	72	42.10	99	57.90	48	47.00	54	53.00	6	37.50	10	62.50
2. Unsuitable climate	135	78.90	36	21.10	74	72.50	28	27.50	10	62.50	6	37.50
3. Insufficient area	163	95.30	8	4.70	93	91.20	9	8.80	13	81.20	3	18.80
4. Insufficient water source	82	47.90	89	52.10	45	44.10	57	55.90	9	56.20	7	43.80
5. Bad public utility	44	25.70	127	74.30	30	29.40	72	70.60	6	37.50	10	62.50
6. Inconvenient transportation	35	20.50	136	79.50	25	24.50	77	75.50	4	25.00	12	75.00
7. Far from milk collecting center of cooperative	66	38.60	105	61.40	21	20.60	81	79.40	6	37.50	10	62.50
Economic aspect												
1. Expensive land, couldn't expand farm	156	91.20	15	8.80	82	80.40	20	19.60	14	87.50	2	12.50
2. Lack of labour	98	57.30	73	42.70	52	51.00	50	49.00	6	37.50	10	62.50
3. Income from farming were insufficient	147	86.00	24	14.00	91	89.20	11	10.80	15	93.70	1	6.30
4. Debt	109	63.70	62	36.30	75	73.50	27	26.50	12	75.00	4	25.00
5. Lack of capital supporting from government	140	81.90	31	18.10	83	81.40	19	18.60	14	87.50	2	12.50
6. High tax of Sub - district Administration Organization	53	31.00	118	69.00	41	40.20	61	59.80	4	25.00	12	75.00

Table 4.30 Problem and obstacle in dairy farming (continue)

Problem and obstacle	LDC (n = 171)				MDC (n = 102)				SDC (n = 16)			
	Has problem		Non - problem		Has problem		Non - problem		Has problem		Non - problem	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Social aspect												
1. Community not admit dairy farming (pollution from waste water, feces)	54	31.60	117	68.40	27	26.50	75	73.50	2	12.50	14	87.50
2. Rule regulation of municipality	44	25.70	127	74.30	33	32.30	69	67.70	3	18.70	13	81.30
3. Lack of information in dairy farming	164	95.90	7	4.10	94	92.20	8	7.80	15	93.70	1	6.30
4. Lack of contact with cooperative officer	125	73.10	46	26.90	59	57.80	43	42.20	11	68.70	5	31.30
5. Lack of contact with government officer	164	95.90	7	4.10	98	96.10	4	3.90	13	81.30	3	18.70
6. Lack of dairy farming training	135	78.90	36	21.10	81	79.40	21	20.60	12	75.00	4	25.00
farm operating aspect												
1. Lack of pasture	163	95.30	8	4.70	100	98.00	2	2.00	13	81.30	3	18.70
2. Low milk production	96	56.10	75	43.90	97	95.10	5	4.90	12	75.00	4	25.00
3. Animal got chronic disease	97	56.70	74	43.30	57	55.90	45	44.10	7	43.70	9	56.30
4. Animal had low fertilization rate	161	94.20	10	5.80	93	91.20	9	8.80	13	81.30	3	18.70
5. Price of a raw milk were low	160	93.60	11	6.40	91	89.20	11	10.80	14	87.50	2	12.50
6. Expensive concentrate feed	171	100.00	-	-	102	100.00	-	-	16	100.00	-	-
7. Expensive fuel	103	60.20	68	39.80	94	92.20	8	7.80	14	87.50	2	12.50
8. Lack of modern equipment	93	54.40	78	45.60	63	61.80	39	38.20	11	68.70	5	31.30
9. Less experience in dairy farming	91	53.20	80	46.80	50	49.00	52	51.00	12	75.00	4	25.00

The researcher divide level of dairy farmers' problems and obstacle on dairy farming in Upper Northern Thailand such as: Physical problems, Economic problems, Social problems and Farm operating problems in upper northern Thailand for find the dairy cooperative's management process contributing to occupation development of dairy farmers in upper northern Thailand in next step.

34. Level of problem and obstacle in dairy farming (physical aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in high level towards insufficient area for dairy farming ($\overline{X}$ = 4.02). (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in medium level towards far from milk collecting center of cooperative ($\overline{X}$ = 3.03), unsuitable climate ($\overline{X}$ = 2.67) and topography not suitable to dairy farming such as tidal flat ,bank etc. ($\overline{X}$ = 2.65) respectively. (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in low level towards bad public utility such as electric system, water supply system ($\overline{X}$ = 2.61), insufficient water source ($\overline{X}$ = 2.51) and inconvenient transportation ($\overline{X}$ = 1.97) respectively. (Table 4.31)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in much level towards insufficient area for dairy farming ($\overline{X}$ = 3.68). (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in medium level towards unsuitable climate ($\overline{X}$ = 2.82), topography not suitable to dairy farming such as tidal flat ,bank etc. ($\overline{X}$ = 2.71) and insufficient water source ($\overline{X}$ = 2.62) respectively. (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in low level towards far from milk collecting center of cooperative ($\overline{X}$ = 2.43), bad public

utility such as electric system, water supply system ($\overline{X}$ = 2.30) and Inconvenient transportation ($\overline{X}$ = 2.24) respectively. (Table 4.31)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in high level towards insufficient area for dairy farming ($\overline{X}$ = 4.23) and Inconvenient transportation ($\overline{X}$ = 3.50) respectively. (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in medium level towards unsuitable climate ($\overline{X}$ = 3.33), far from milk collecting center of cooperative ($\overline{X}$ = 3.00) and bad public utility such as electric system, water supply system ($\overline{X}$ = 2.67) respectively. (Table 4.31)

Problem and obstacle in dairy farming (physical aspect) in low level towards Insufficient water source ($\overline{X}$ = 2.56) and topography not suitable to dairy farming such as tidal flat ,bank etc ($\overline{X}$ = 2.30) respectively. (Table 4.31)

Table 4.31 Level of problem and obstacle in dairy farming (physical aspect)

Level of problem and obstacle in dairy farming (physical aspect)	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Topography not suitable to dairy farming such as tidal flat ,bank etc.	2.65	1.22	Medium	2.71	1.07	Medium	3.33	1.03	Medium
2. Unsuitable climate	2.67	0.94	Medium	2.82	0.96	Medium	2.30	1.06	Low
3. Insufficient area for dairy farming	4.02	0.98	High	3.68	1.12	High	4.23	1.09	High
4. Insufficient water source	2.51	1.20	Low	2.62	1.28	Medium	2.56	1.13	Low
5. Bad public utility	2.61	1.19	Low	2.30	1.09	Low	2.67	1.63	Medium
6. Inconvenient transportation	1.97	0.86	Low	2.24	1.23	Low	3.50	0.58	High
7. Far from milk collecting center of cooperative	3.03	1.45	Medium	2.43	1.50	Low	3.00	1.26	Medium

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

35. Level of problem and obstacle in dairy farming (economic aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in high level towards expensive land, couldn't expand farm ($\overline{X}$ = 3.96) and lack of capital supporting from government ($\overline{X}$ = 3.66) respectively. (Table 4.32)

Problem and obstacle in dairy farming (economic aspect) in medium level towards income from dairy farming were insufficient ($\overline{X}$ = 3.03) and debt ($\overline{X}$ = 3.03) respectively. (Table 4.32)

Problem and obstacle in dairy farming (economic aspect) in low level towards high tax of Sub district Administration Organization ($\overline{X}$ = 2.34) and lack of labour ($\overline{X}$ = 2.29) respectively. (Table 4.32)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in high level towards expensive land, couldn't expand farm ($\overline{X}$ = 3.70) and lack of capital supporting from government ($\overline{X}$ = 3.63) respectively. (Table 4.32)

Problem and obstacle in dairy farming (economic aspect) in medium level towards debt ($\overline{X}$ = 3.12), high tax of Sub district Administration Organization ($\overline{X}$ = 3.10) and income from dairy farming were insufficient ($\overline{X}$ = 2.95) respectively. (Table 4.32)

Problem and obstacle in dairy farming (economic aspect) in low level towards lack of labour ($\overline{X}$ = 2.56). (Table 4.32)

Small Dairy Cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in high level towards lack of capital supporting from government ($\overline{X}$ = 4.14), income from dairy farming were insufficient ($\overline{X}$ = 3.56) and expensive land, couldn't expand farm ($\overline{X}$ = 3.43) respectively. (Table 4.32)

Problem and obstacle in dairy farming (economic aspect) in medium level towards debt ($\overline{X}$ = 3.42), lack of labour ($\overline{X}$ = 3.00) and high tax of Sub district Administration Organization ($\overline{X}$ = 2.75) respectively. (Table 4.32)

Table 4.32 Level of problem and obstacle in dairy farming (economic aspect)

Level of problem and obstacle in dairy farming (economic aspect)	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Expensive land, couldn't expand farm	3.96	0.97	High	3.70	1.11	High	3.43	1.34	High
2. Lack of labour	2.29	1.07	Low	2.56	0.92	Low	3.00	1.10	Medium
3. Income from farming were insufficient	3.03	1.13	Medium	2.95	1.05	Medium	3.56	1.31	High
4. Debt	2.96	1.16	Medium	3.12	1.16	Medium	3.42	0.67	Medium
5. Lack of capital supporting from government	3.66	1.20	High	3.63	1.00	High	4.14	0.86	High
6. High tax of Sub district Administration Organization	2.34	1.06	Low	3.10	1.14	Medium	2.75	0.50	Medium

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

36. Level of problem and obstacle in dairy farming (social aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (social aspect) in high level towards lack of information in dairy farming ($\overline{X}$ = 4.14) and lack of contact with government officer ($\overline{X}$ = 3.65) respectively. (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in medium level towards lack of dairy farming training ($\overline{X}$ = 2.96) and lack of contact with cooperative officer ($\overline{X}$ = 2.79) respectively. (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in low level towards rule regulation of municipality ($\overline{X}$ = 2.55) and community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 2.31) respectively. (Table 4.33)

Medium dairy cooperative

It was found that Level of problem and obstacle in dairy farming (social aspect) in high level towards lack of information in dairy farming ($\overline{X}$ = 3.99) and lack of contact with government officer ($\overline{X}$ = 3.55) respectively. (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in medium level towards lack of dairy farming training ($\overline{X}$ = 3.04), community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 2.85) and lack of contact with cooperative officer ($\overline{X}$ = 2.63) respectively. (Table 39)

Problem and obstacle in dairy farming (social aspect) in low level towards rule regulation of municipality ($\overline{X}$ = 2.45). (Table 4.33)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (social aspect) in highest level lack of information in dairy farming ($\overline{X}$ = 4.33). (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in high level towards lack of contact with government officer ($\overline{X}$ = 4.19) and lack of dairy farming training ($\overline{X}$ = 3.83) respectively. (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in medium level towards lack of contact with cooperative officer ($\overline{X}$ = 2.73) (Table 4.33)

Problem and obstacle in dairy farming (social aspect) in low level towards community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 2.50) and rule regulation of municipality ($\overline{X}$ = 2.00) respectively. (Table 4.33)

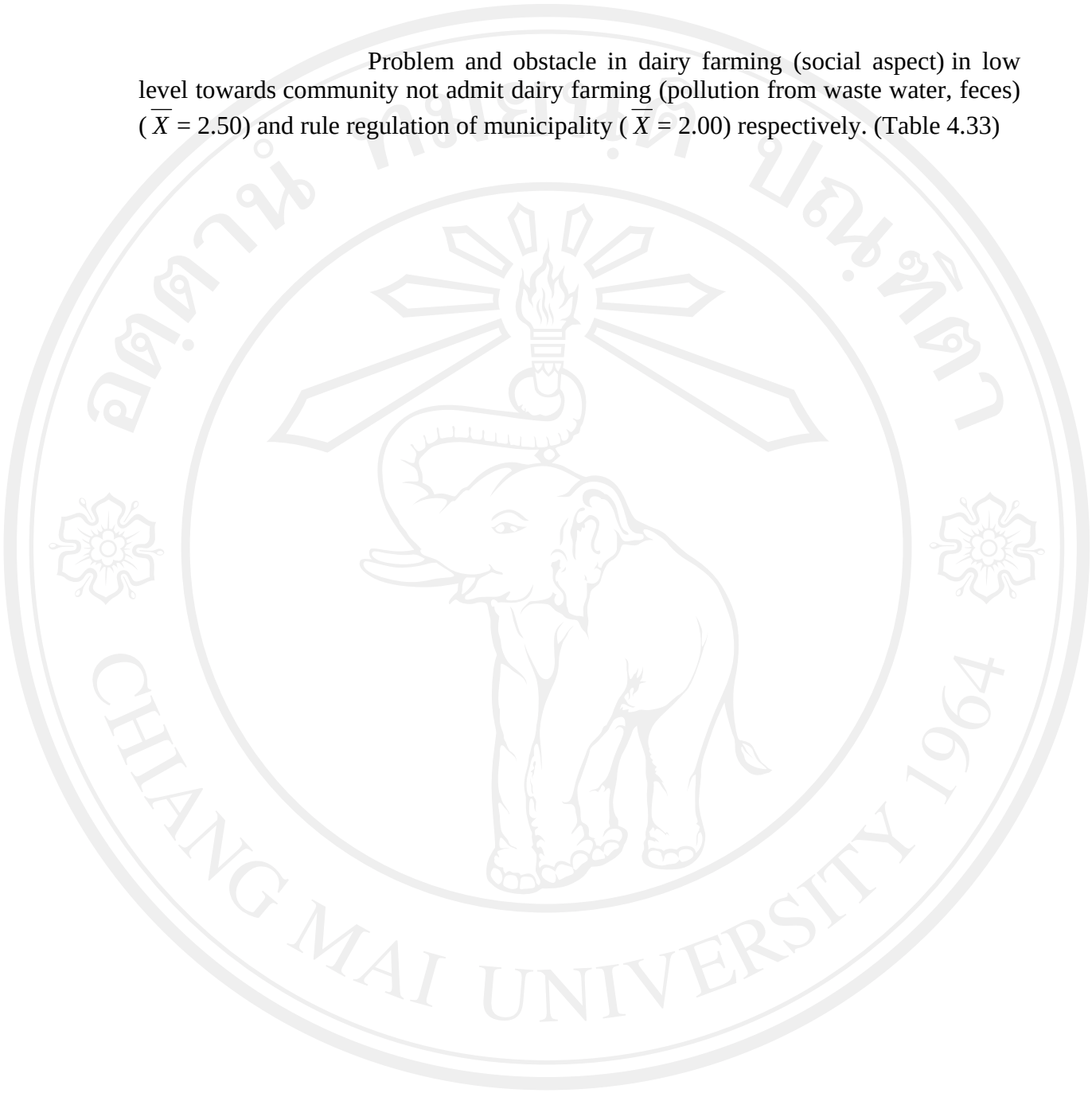


Table 4.33 Level of problem and obstacle in dairy farming (social aspect)

Level of problem and obstacle in dairy farming (social aspect)	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Community not admit dairy farming (pollution from waste water, feces)	2.31	0.95	Low	2.85	1.29	Medium	2.50	0.71	Low
2. Rule regulation of municipality	2.55	1.00	Low	2.45	1.25	Low	2.00	1.00	Low
3. Lack of information in dairy farming	4.14	0.80	High	3.99	0.96	High	4.33	0.90	Highest
4. Lack of contact with cooperative officer	2.79	1.30	Medium	2.63	0.98	Medium	2.73	1.01	Medium
5. Lack of contact with government officer	3.65	1.12	High	3.55	1.03	High	4.19	0.75	High
6. Lack of dairy farming training	2.96	1.24	Medium	3.04	1.09	Medium	3.83	1.59	High

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

36. Level of problem and obstacle in dairy farming (farm operating aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards expensive concentrate feed ($\overline{X}$ = 4.57). (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards lack of pasture ($\overline{X}$ = 4.23), expensive fuel ($\overline{X}$ = 3.73), price of a raw milk were low ($\overline{X}$ = 3.59) and low milk production ($\overline{X}$ = 3.43) respectively. (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards animal had low fertilization rate ($\overline{X}$ = 2.96). (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in low level towards less experience in dairy farming ($\overline{X}$ = 2.60), lack of modern equipment ($\overline{X}$ = 2.54) and animal got chronic disease ($\overline{X}$ = 2.16) respectively. (Table 4.34)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards expensive concentrate feed ($\overline{X}$ = 4.46). (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards expensive fuel ($\overline{X}$ = 4.14), lack of pasture ($\overline{X}$ = 3.86) and low milk production ($\overline{X}$ = 3.48) respectively. (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards price of a raw milk were low ($\overline{X}$ = 3.32), animal had low fertilization rate ($\overline{X}$ = 3.01), lack of modern equipment ($\overline{X}$ = 2.92) and less experience in dairy farming ($\overline{X}$ = 2.90) respectively. (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in low level towards animal got chronic disease ($\overline{X}$ = 2.40). (Table 4.34)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards expensive concentrate feed ($\overline{X}$ = 4.56). (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards expensive fuel ($\overline{X}$ = 4.13), lack of pasture ($\overline{X}$ = 3.85), price of a raw milk were low ($\overline{X}$ = 3.79), low milk production ($\overline{X}$ = 3.63) and less experience in dairy farming ($\overline{X}$ = 3.50) respectively. (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards animal had low fertilization rate ($\overline{X}$ = 3.25) and lack of modern equipment ($\overline{X}$ = 2.73) respectively. (Table 4.34)

Problem and obstacle in dairy farming (farm operating aspect) in low level towards animal got chronic disease ($\overline{X}$ = 1.86). (Table 4.34)

Table 4.34 Level of problem and obstacle in dairy farming (farm operating aspect)

Level of problem and obstacle in dairy farming (farm operating aspect)	LDC (n = 171)			MDC (n = 102)			SDC (n = 16)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Lack of pasture	4.23	0.82	High	3.86	1.09	High	3.85	0.99	High
2. Low milk production	3.43	1.20	High	3.48	1.07	High	3.63	1.15	High
3. Animal got chronic disease	2.16	0.94	Low	2.40	1.10	Low	1.86	1.07	Low
4. Animal had low fertilization rate	2.96	0.90	Medium	3.01	1.01	Medium	3.25	1.06	Medium
5. Price of a raw milk were low	3.59	1.07	High	3.32	1.12	Medium	3.79	1.12	High
6. Expensive concentrate feed	4.57	0.57	Highest	4.46	0.71	Highest	4.56	0.51	Highest
7. Expensive fuel	3.73	1.03	High	4.14	0.77	High	4.13	1.15	High
8. Lack of modern equipment	2.54	1.08	Low	2.92	1.07	Medium	2.73	0.65	Medium
9. Less experience in dairy farming	2.60	1.32	Low	2.90	1.11	Medium	3.50	1.00	High

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in Upper Northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 level including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

38. The decision to continue doing dairy farming in the future

Large dairy cooperative: It was found that the most of farmer samples have decide quit dairy farming which is averaged at 53.80% and decide continue doing dairy farming occupation which is averaged at 46.20%. (Table 4.35)

Medium dairy cooperative: It was found that the most of farmer samples have decide continue doing dairy farming which is averaged at 72.60% and decided quit dairy farming occupation which is averaged at 27.40%. (Table 4.35)

Small dairy cooperative: It was found that the most of farmer samples have decide continue doing dairy farming which is averaged at 56.20% and decide quit dairy farming occupation which is averaged at 43.80%. (Table 4.35)

Table 4.35 The decision to continue doing dairy farming in the future

The decision to continue doing dairy farming in the future	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)		Total (N = 289)	
	No.	%	No.	%	No.	%	No.	%
Decide continue doing dairy farming	79	46.20	74	72.60	9	56.20	162	56.10
Decide quit dairy farming	92	53.80	28	27.40	7	43.80	127	43.90
Total	171	100.00	102	100.00	16	100.00	289	100.00

39. Farmers' need any assistance in dairy farming

Large dairy cooperative: It was found that the most of farmer samples need assistance in concentrate feed that good quality and cheap price which is averaged at 93.30%, and the secondary, the farmer samples need increase of raw milk price which is averaged at 89.70%. There are only few farmer samples need a clean water source which is averaged at 25.20%. (Table 4.36)

Medium dairy cooperative: It was found that the most of farmer samples need assistance in increase of raw milk price and concentrate feed that good quality and cheap price which is averaged at 97.10%, and the secondary, the farmer samples need acquire latest information in dairy farming which is averaged at

86.30%. There are only few farmer samples need a clean water source which is averaged at 37.30%. (Table 4.36)

Small dairy cooperative: It was found that the most of farmer samples need assistance in concentrate feed that good quality and cheap price and dairy medicine supporting which is averaged at 100.00%, and the secondary, the farmer samples need increase of raw milk price and capital supporting from government which is averaged at 87.50%. There are only few farmer samples need a clean water source which is averaged at 18.80%. (Table 4.36)

Table 4.36 Farmers' need any assistance in dairy farming

Farmers' need any assistance in dairy farming [1/]	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)	
	No.	%	No.	%	No.	%
1. Dairy breed which give highly yield	123	71.90	83	81.40	12	75.00
2. Increase raw milk price	153	89.70	99	97.10	14	87.50
3. Area for pasture	123	71.90	79	77.50	7	43.80
4. Fine and Cheap concentrate feed	168	98.30	99	97.10	16	100.00
5. Clean water source	43	25.20	38	37.30	3	18.80
6. Capital supporting from government	113	66.10	85	83.30	14	87.50
7. Dairy medicine supporting	137	80.10	78	76.50	16	100.00
8. Acquire latest information in dairy farming	143	83.60	88	86.30	13	81.30
9. Increase number of government officer	84	49.10	65	63.70	13	81.30

Remark: [1/] Could answer more than 1 item

40. Farmers' need any training from agency concerning dairy farming

Large dairy cooperative: It was found that the most of farmer samples need training from agency concerning elementary prevent and treatment disease which is averaged at 67.30%, and the secondary, the farmer samples need training from agency concerning effective dairy farming management which is averaged at 62.60%. There are only few farmer samples need training from agency concerning elementary processed milk product such as yogurt, ice cream and sour milk which is averaged at 28.10%. (Table 4.37)

Medium dairy cooperative: It was found that the most of farmer samples need training from agency concerning effective dairy farming management which is averaged at 74.50%, and the secondary, the farmer samples need training from agency concerning elementary prevent and treatment disease which is averaged at 70.60%. There are only few farmer samples need training from agency concerning farm accounting which is averaged at 47.10%. (Table 4.37)

Small dairy cooperative: It was found that the most of farmer sample needed training from agency concerning effective dairy farming management which is averaged at 87.50%, and the secondary, the farmer samples need from agency concerning are elementary prevent and treatment disease and elementary checking in raw milk quality which is averaged at 68.80%. There are only few farmer samples need training from agency concerning preparation of pasture and forage, farm accounting and elementary processed milk product such as yogurt, ice cream and sour milk which is averaged at 31.30%. (Table 4.37)

Table 4.37 Farmers' need any training from agency concerning dairy farming

Farmers' need any training from agency concerning dairy farming [1/]	LDC (n = 171)		MDC (n = 102)		SDC (n = 16)	
	No.	%	No.	%	No.	%
1. Artificial insemination	74	43.30	60	58.80	7	43.80
2. Dairy farming standard	59	34.50	51	50.00	7	43.80
3. Effective dairy farming management	107	62.60	76	74.50	14	87.50
4. Preparation of pasture and forage	79	46.20	53	52.00	5	31.30
5. Milking machine maintenance	88	51.50	60	58.80	7	43.80
6. Elementary Prevent and treatment disease	115	67.30	72	70.60	11	68.80
7. Farm accounting	57	33.30	48	47.10	5	31.30
8. Elementary checking in raw milk quality	84	49.10	49	48.00	11	68.80
9. Elementary processed milk product such as yogurt, ice cream and sour milk	48	28.10	49	48.00	5	31.30

Remark: [1/] Could answer more than 1 item

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand.

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
1. Personal basic factors			
1.1). Gender	Male	Male	Male
1.2). Age (average)	47.20 years	45.49 years	45.75 years
1.3). Level of education	Elementary school grade 4	Elementary school grade 4	Elementary school grade 4 and Secondary school grade 3
1.4). Experience of dairy farming (average)	13.16 years	9.98 years	5.94 years
1.5). Period on membership of dairy cooperative (average)	12.22 years	7.07 years	6.31 years
1.6). Knowledge in dairy farming (Mean score / Level)	16.05 / Medium	16.12 / Medium	15.56 / Medium
1.7). Practice in Dairy farming (Mean score / Level)	1.28 / Medium	1.39 / High	1.22 / Medium
2. Economic factors			
2.1) Number of family members (average)	3.74 persons	3.87 persons	3.25 persons
2.2) Number of labours for dairy farming (average)	2.05 persons	2.07 persons	1.88 persons
2.3) Total outstanding debts (average)	179,648.35 Baht	238,197.78 Baht	320,500.00 Baht
3. Social factors			
3.1) Occupy in dairy cooperative	Do not have position	Do not have position	Do not have position
3.2) Occupy in social position	Do not have position	Do not have position	Do not have position
3.3) Participation in various activities of dairy cooperative (Mean / Level)	1.21 / Medium	1.28 / Medium	1.22 / Medium

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
3. Social factors			
3.4) Acquire information about dairy farming from various medias (Number of farmer who received medias / Mean of time (received in 1 month))			
3.4.1) Brochure and Document	72 persons / 1.49 time	42 persons / 1.52 time	4 persons / 1.50 time
3.4.2) Newspaper	64 persons / 2.05 time	27 persons / 1.70 time	7 persons / 2.57 time
3.4.3) Livestock magazine	44 persons / 1.68 time	39 persons / 1.38 time	4 persons / 1.25 time
3.4.4) Radio	87 persons / 2.47 time	44 persons / 3.18 time	8 persons / 2.25 time
3.4.5) Television	124 persons / 2.60 time	70 persons / 3.03 time	13 persons / 2.08 time
3.4.6) Farmer's friend	136 persons / 5.62 time	78 persons / 5.83 time	13 persons / 5.31 time
3.4.7) Communication board of dairy cooperative	150 persons / 3.79 time	81 persons / 3.64 time	14 persons / 3.00 time
3.4.8) Internet	6 persons / 3.00 time	6 persons / 4.83 time	2 persons / 4.00 time
3.5) Communication with officer concerning dairy farming (Number of farmer who communicated officer / Mean of time (communicated in 1 month)			
3.5.1) District Livestock Officer	81 persons / 1.49 time	65 persons / 1.72 time	9 persons / 1.44 time
3.5.2) District Artificial Insemination Officer	121 persons / 2.55 time	82 persons / 2.76 time	11 persons / 1.82 time
3.5.3) Artificial Insemination Volunteer	144 persons / 3.06 time	74 persons / 3.18 time	11 persons / 2.09 time
3.5.4) Lecturer of academy	36 persons / 1.42 time	23 persons / 1.96 time	1 persons / 1.00 time
3.5.5) Dairy cooperative officer	132 persons / 3.84 time	71 persons / 4.20 time	11 persons / 4.45 time
3.5.6) Representative from company	17 persons / 1.71 time	17 persons / 2.47 time	3 persons / 1.33 time

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
4. Farm operating factors			
4.1) Style of dairy farming	Tying style	Tying style	Tying style
4.2) Dairy farming standard recognized from DLD	Recognized already	Recognized already	Recognized already
4.3) Number of dairy replacement (calf, growing cattle, heifer) (average)	13.17 dairies	13.01 dairies	10.50 dairies
4.4) Number of dairy (milking dairy and dry dairy) (average)	17.12 dairies	16.88 dairies	14.50 dairies
4.5) Capability on milk production of dairy (average)	10.82 kg./dairy/day	10.57 kg./dairy/day	10.38 kg./dairy/day
4.6) Purchase price of raw milk (average)	15.97 Baht / kg.	15.64 Baht / kg.	13.90 Baht / kg.
4.7) Farm land owning for dairy farming (average)	6.61 Rai	6.22 Rai	8.72 Rai
4.8) Size of area for pasture (average)	6.28 Rai	6.04 Rai	8.30 Rai
4.9) Cognizance in operating of Dairy Cooperative (Mean score / Level)	5.16 / Medium	5.28 / Medium	4.38 / Medium
4.10) Satisfaction to Dairy Cooperative operation (Mean score / Level)	3.04 / High	3.05 / High	2.80 / High
4.11) Satisfaction in operation of government officer (Mean score / Level)	3.02 / High	2.86 / High	2.67 / High
4.12) Satisfaction in earn a living by dairy farming (Mean score / Level)	2.61 / High	2.71 / High	2.33 / Low

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
4. Farm operating factors			
4.13) Opinion of the dairy farmer in career succession of their child	Not take succession	Not take succession	Not take succession
4.14) Decision to continue doing dairy farming of the farmers	Quit dairy farming	Continue doing dairy faring	Continue doing dairy faring
4.15) Problems and obstacle in dairy farming (physical aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.15.1) Topography not suitable to dairy farming	72 persons / 2.65 / Medium	48 persons / 2.71 / Medium	6 persons / 3.33 / Medium
4.15.2) Unsuitable climate	135 persons/ 2.67/ Medium	74 persons / 2.82 / Medium	10 persons / 2.30 / Low
4.15.3) Insufficient area for dairy farming	163 persons / 4.02 / High	93 persons / 3.68 / High	13 persons / 4.23 / High
4.15.4) Insufficient water source	82 persons / 2.51 / Low	45 persons / 2.62 / Medium	9 persons / 2.56 / Low
4.15.5) Bad public utility	44 persons / 2.61 / Low	30 persons / 2.30 / Low	6 persons / 2.67 / Medium
4.15.6) Inconvenient transportation	35 persons / 1.97 / Low	25 persons / 2.24 / Low	4 persons / 3.50 / High
4.15.7) Far from milk collecting center of cooperative	66 persons / 3.03 / Medium	21 persons / 2.43 / Low	6 persons / 3.00 / Medium

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
4. Farm operating factors			
4.16) Problems and obstacle in dairy farming (economic aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.16.1) Expensive land, couldn't expand farm	156 persons / 3.96 / High	82 persons / 3.70 / High	14 persons / 3.43 / High
4.16.2) Lack of labour	98 persons / 2.29 / Low	52 persons / 2.56 / Low	6 persons / 3.00 / Medium
4.16.3) Income from farming were insufficient	147 persons/ 3.03/ Medium	91 persons / 2.95 / Medium	15 persons / 3.56 / High
4.16.4) Debt	109 persons / 2.96/ Medium	75 persons / 3.12 / Medium	12 persons/ 3.42 /Medium
4.16.5) Lack of capital supporting from government	140 persons / 3.66 / High	83 persons / 3.63 / High	14 persons / 4.14 / High
4.16.6) High tax of Sub district Administration Organization	53 persons / 2.34 / Low	41 persons / 3.10 / Medium	4 persons / 2.75 / Medium
4.17) Problems and obstacle in dairy farming (social aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.17.1) Community not admit dairy farming (pollution from waste water, feces)	54 persons / 2.31 / Low	27 persons / 2.85 / Medium	2 persons / 2.50 / Low
4.17.2) Rule regulation of municipality	44 persons / 2.55 / Low	33 persons / 2.45 / Low	3 persons / 2.00 / Low

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
4. Farm operating factors			
4.17) Problems and obstacle in dairy farming (social aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.17.3) Lack of information in dairy farming	164 persons / 4.14 / High	94 persons / 3.99 / High	15 persons / 4.33 / Highest
4.17.4) Lack of contact with cooperative officer	125 persons/ 2.79/ Medium	59 persons / 2.63 / Medium	11 persons / 2.73 / Medium
4.17.5) Lack of contact with government officer	164 persons / 3.65 / High	98 persons / 3.55 / High	13 persons / 4.19 / High
4.17.6) Lack of dairy farming training	135 persons/ 2.96/ Medium	81 persons / 3.04 / Medium	12 persons / 3.83 / High
4.18) Problems and obstacle in dairy farming (farm operating aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.18.1) Lack of pasture	163 persons / 4.23 / High	100 persons / 3.86 / High	13 persons / 3.85 / High
4.18.2) Low milk production	96 persons / 3.43 / High	97 persons / 3.48 / High	12 persons / 3.63 / High
4.18.3) Animal got chronic disease	97 persons / 2.16 / Low	57 persons / 2.40 / Low	7 persons / 1.86 / Low
4.18.4) Animal had low fertilization rate	161 persons/ 2.96/ Medium	93 persons / 3.01 / Medium	13 persons / 3.25 / Medium

Table 4.38 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which continue doing dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 171)	Medium dairy cooperative (n = 102)	Small dairy cooperative (n = 16)
4. Farm operating factors			
4.18) Problems and obstacle in dairy farming (farm operating aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.18.5) Price of a raw milk were low	160 persons / 3.59 / High	91 persons / 3.32 / Medium	14 persons / 3.79 / High
4.18.6) Expensive concentrate feed	171 persons/ 4.57/ Highest	102 persons/ 4.46/ Highest	16 persons / 4.56 / Highest
4.18.7) Expensive fuel	103 persons / 3.73 / High	94 persons / 4.14 / High	14 persons / 4.13 / High
4.18.8) Lack of modern equipment	93 persons / 2.54 / Low	63 persons / 2.92 / Medium	11 persons / 2.73 / Medium
4.18.9) Less experience in dairy farming	91 persons / 2.60 / Low	50 persons / 2.90 / Medium	12 persons / 3.50 / High

Relation between independent variables and decision to continue dairy farming of farmers who are members of dairy cooperatives in upper northern Thailand

Relations between age, level of education, dairy experience, knowledge and practice in dairy farming, family member, labour used in dairy farming, outstanding debts, occupying position in a dairy cooperative or social, participation in various activity of dairy cooperative, acquire information about dairy farming from medias, communication with dairy officers, dairy standard qualification by DLD, numbers of dairy replacement in the farm, numbers of milking dairy cattle in the farm, capability to produce raw milk of the milking dairy cattle, a purchase price offered to the members, an occupied area used in dairy farming, cognizance toward dairy cooperatives' operation, satisfactory level towards dairy cooperatives' operation, dairy-related government sections and dairy career, opinions of members towards dairy career succession of their children, physical, economics, social and farm operation problems and obstacles in doing dairy farm. The data gained was then analyzed by using an instant program (Statistical Package for Social Science (SPSS for Window)), that is Logistic Regression Analysis.

Table 4.39 Mean and standard deviation of variables that are applied for Logistic Regression Analysis

N = 289 (farmer who continue doing dairy farming)

Variables	Mean	Standard deviation
X_1 Age	46.52	9.61
X_2 Level of education	3.30	1.60
X_3 Experience in dairy farming	11.64	6.86
X_4 Knowledge in dairy farming	16.05	2.29
X_5 Practice in dairy farming	26.24	4.84
X_6 Number of family members	3.76	1.21
X_7 Number of labours for dairy farming	2.05	0.78
X_8 Total outstanding debts	175,488.93	214,408.63
X_9 Occupy in dairy cooperative position	0.21	0.41
X_{10} Occupy in social position	0.13	0.34

Table 4.39 Mean and standard deviation of variables that are applied for Logistic Regression Analysis (continue)

N = 289 (farmer who continue doing dairy farming)

Variables	Mean	Standard deviation
X_{11} Participation in various activities of dairy cooperative	12.34	3.07
X_{12} Acquire information about dairy farming from medias	12.76	8.05
X_{13} Communication with officer concerning dairy farming	8.75	5.44
X_{14} Dairy farming standard recognized from DLD	0.58	0.49
X_{15} Number of dairy replacement (calf, growing cattle and heifer)	12.83	7.69
X_{16} Number of dairy (milking dairy and dry dairy)	21.66	12.22
X_{17} Capability on milk production of dairy	10.71	2.18
X_{18} Purchase price of raw milk	15.74	1.16
X_{19} Farm land owning for dairy farming	6.54	6.69
X_{20} Cognizance in operating of dairy cooperative	5.16	1.58
X_{21} Satisfaction to dairy cooperative operation	45.47	6.74
X_{22} Satisfaction in operation of government officers	41.21	5.83
X_{23} Satisfaction in earn a living by dairy farming	26.28	3.44
X_{24} Opinion of the dairy farmer in career succession of their child	0.22	0.42
X_{25} Problems and obstacle in dairy farming (physical aspect)	31.82	4.88
X_{26} Problems and obstacle in dairy farming (economic aspect)	22.70	4.37
X_{27} Problems and obstacle in dairy farming (social aspect)	22.98	4.10
X_{28} Problems and obstacle in dairy farming (farm operating aspect)	28.20	5.27
Y The decision to continue dairy farming of farmers	0.56	0.50

Table 4.40 Relation between variables that are analyzed by Logistic Regression Analysis when the decision to continue doing dairy farm of the farmers serves as a dependent variable (Y)

	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Y	1										
X_1	-.197**	1									
X_2	.147*	-.586**	1								
X_3	-.302**	.302**	-.239**	1							
X_4	.068	-.092	.151**	.096	1						
X_5	.170**	-.196**	.201**	-.125*	.165**	1					
X_6	.053	.005	.105	.075	-.006	-.040	1				
X_7	.001	.048	-.092	.052	-.044	.025	.262**	1			
X_8	.148*	-.045	.104	-.153**	.062	.057	-.046	-.113	1		
X_9	.006	-.077	.177**	-.059	.127*	.160**	.004	.034	.043	1	
X_{10}	.003	-.078	.148*	.111	-.031	.127*	-.038	-.051	.086	-.002	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 4.40 Relation between variables that are analyzed by Logistic Regression Analysis when the decision to continue doing dairy farm of the farmers serves as a dependent variable (Y) (continue)

	Y	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}
Y	1										
X_{11}	.114	1									
X_{12}	.090	.288**	1								
X_{13}	.110	.261**	.214**	1							
X_{14}	-.073	.092	.038	.129*	1						
X_{15}	-.046	.170**	.122*	.110	.196**	1					
X_{16}	-.107	.154**	.064	.180**	.229**	.735**	1				
X_{17}	.043	.041	.090	.122*	.154**	.131*	.144*	1			
X_{18}	-.069	.111	.076	.118*	.086	-.040	.023	.045	1		
X_{19}	.019	.081	.021	.040	.191**	.183**	.258**	-.026	-.135*	1	
X_{20}	.059	.319**	.234**	.015	.108	.200**	.194**	.141*	.183**	-.007	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 4.40 Relation between variables that are analyzed by Logistic Regression Analysis when the decision to continue doing dairy farm of the farmers serves as a dependent variable (Y) (continue)

	Y	X_{21}	X_{22}	X_{23}	X_{24}	X_{25}	X_{26}	X_{27}	X_{28}
Y	1								
X_{21}	-.093	1							
X_{22}	-.174**	.543**	1						
X_{23}	.006	.226**	.395**	1					
X_{24}	.204**	.034	.057	.058	1				
X_{25}	.104	-.021	.045	.076	.033	1			
X_{26}	-.147*	.111	.094	.175**	.108	.148*	1		
X_{27}	.066	.037	-.003	.274**	.093	.229**	.263**	1	
X_{28}	.018	.012	.079	.245**	.108	.225**	.439**	.452**	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

In finding relations between independent variables themselves by using Pearson Product Moment Correlation Analysis, it found that no pair of independent variables are highly correlated above 0.80 that can indicate a multicollinearity problem, and that violates conditions of Logistic Regression Analysis.

For the result gained from logistic regression analysis by equating all 28 independent variables by Forward : LR , it appeared that Chi-square (Omnibus Tests of Model Coefficients) Model = 73.045, df = 6, sig = 0.000, which means at least one independent variable is related. When considering multiple coefficient of Pscudo R^2, (Nagelkerke R^2) = 0.299, means that all independent variables in final equation can explain variableness of dependent variables. (decision to continue doing dairy farm of farmers who are members of dairy cooperatives in upper northern Thailand) at 29.9 percent, in which all 28 independent variables found 6 variables effecting to dependent variables with statistical significance at 0.05 such as; 1) age (X_1), 2) experience of dairy farming (X_3), 3) practice in dairy farming (X_5), 4) level of satisfaction in operation of government officer concerning dairy farming (X_{22}), 5) opinions of the dairy farmer towards dairy career succession of their children (X_{24}) and 6) levels of problems and obstacles in dairy farming (economic aspect) (X_{26}).

While the variables that have a positive affect are the following; 1) practice in dairy farming (X_5) and 2) opinions of the dairy farmer towards dairy career succession of their children (X_{24}). The relation of these variables can be described below:

1) Dairy farmer who have good dairy operation and practice would decide to continue doing this career rather than the farmers who have poor dairy operation and practice.

2) Dairy farmers who have a thought that their children will succeed their career would continue doing this career rather than the farmers who do not think that their children will succeed their career.

As for the variables that have a negative affect are the following; 1) age (X_1), 2) experience of dairy farming (X_3), 3) level of satisfaction in operation of government officer concerning dairy farming (X_{22}) and 4) levels of problems and

obstacles in dairy farming (economic aspect) (X_{26}). The relation of these variables can be described below:

1) Younger dairy farmers would decide to continue doing dairy farm rather than older dairy farmers.

2) Dairy farmers who have less dairy experience would decide to continue doing dairy farm rather than the farmers who have more dairy experience.

3) Dairy farmers who have less satisfactory level towards operation of dairy-related government authorities would decide to continue doing airy farm rather than the farmers who have more satisfactory level towards operation of dairy-related government authorities.

4) Dairy farmers who have lower level of economics problems and obstacles in doing dairy farm would decide to continue doing dairy farm rather than the farmers who have higher level of economics problems and obstacles in doing dairy farm.

Details are shown in table 47 all variables can be analyzed by describing techniques as follows:

P (decision to continue doing dairy farm of farmers) = P (Y = 1)

$$P(Y=1) = \frac{1}{1+e^{-(B_0+B_1X_1+.....+B_{28}X_{28})}}$$

$$= \frac{1}{1+e^{-(w)}}$$

w = 6.142 – 0.040 (X_1) – 0.083 (X_3) + 0.068 (X_5) - 0.069 (X_{22}) + 1.619 (X_{24}) – 0.102 (X_{26})

w = 6.142 – 0.040 (age) – 0.083 (experience of dairy farming) + 0.068 (practice in dairy farming) – 0.069 (level of satisfaction in operation of government officer concerning dairy farming) + 1.619 (opinions of the dairy farmer towards dairy career succession of their children)– 0.102 (levels of problems and obstacles in dairy farming (economic aspect))

Table 4.41 Logistic Regression Analysis of factors influencing to dairy farmers' decision to continue doing dairy farming.

Variables	B	S.E.	Wald	df	Exp(B)	p-value
Age (X_1)	-.040	.016	6.067	1	.961	.014
Experience of dairy farming (X_3)	-.083	.022	14.728	1	.920	.000
Practice in dairy farming (X_5)	.068	.029	5.337	1	1.070	.021
Level of satisfaction in operation of government officer concerning dairy farming (X_{22})	-.069	.024	8.285	1	.933	.004
Opinions of the dairy farmer towards dairy career succession of their children (X_{24})	1.619	.372	18.979	1	5.046	.000
Levels of problems and obstacles in dairy farming (economic aspect) (X_{26})	-.102	.033	9.824	1	.903	.002
Chi-square (Omnibus Tests of Model Coefficients) Model = 73.045, df = 6, sig = 0.000						
Chi-square (Hosmer and Lemeshow Test) = 5.085, df = 8, sig = 0.748						
-2 Log likelihood = 323.345, Cox & Snell R Square = 0.223, Pscudo R^2 (Nagelkerke R^2) = 0.299						
Constant = 6.142						

Group 2: Farmers who quit dairy farming and used to be a members of the dairy cooperative

The researcher collected data from 45 questionnaires that account to 39.13% of sampling from farmer who quit dairy farming in upper northern Thailand.

However, the researcher encountered some problems and obstacles as described below:

1. The farmers who quit dairy farming decided to do other occupation in other area while some of them moved to other area to avoid paying outstanding debts owed to the dairy cooperative.

2. The farmers who quit dairy farming did not give well cooperation in answering the questionnaire since they thought that it is not their interest.

The data gained by questionnaire conducted with farmers who quit dairy farming and used to be a member of the dairy cooperative was then analyzed and can be concluded as follows:

Personal basic factors

1. Gender

Large dairy cooperative: It was found that the most of farmer samples were male which is averaged at 92.30% and were female at 7.70% (Table 4.42)

Medium dairy cooperative: It was found that the most of farmer samples were male which is averaged at 88.90% and were female at 11.10% (Table 4.42)

Small dairy cooperative: It was found that the most of farmer samples were male which is averaged at 82.60% and were female at 17.40% (Table 4.42)

Table 4.42 Gender

Gender	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Female	1	7.70	1	11.10	4	17.40	6	13.30
Male	12	92.30	8	88.90	19	82.60	39	86.70
Total	13	100.00	9	100.00	23	100.00	45	100.00

2. Age

Large dairy cooperative: It was found that the farmer samples age are the oldest at 66 years old and youngest at 32 years old with an average at 46.46 years old. The most of farmer samples age are between 48 -57 years old, between 42 – 47 years old, equivalent to or more than 68 years old which is averaged at 23.10%, and the secondary span of age is between 30 – 35 years old which is averaged at 15.30%. There are only few farmer samples whose ages are between 48 – 53 year old and between 54 – 59 years old which is averaged at 7.70%. (Table 4.43)

Medium dairy cooperative: It was found that the farmers sample age are the oldest at 60 years old and youngest at 40 years old with an average at 52.44 years old. The most of farmer samples age are between 48 - 53 years old which is averaged at 44.40%, and the secondary span of age are between 54 – 59 years and equivalent to or more than 60 years old which is averaged at 22.20%. There are only few farmer samples whose ages is between 36 – 41 year old which is averaged at 11.20%. (Table 4.43)

Small dairy cooperative: It was found that the farmer samples age are the oldest at 61 years old and youngest at 30 years old with an average at 50.61 years old. The most of farmer samples age are between 54 -59 years old which is averaged at 34.78%, and the secondary span of age is between 48 – 53 years old which is averaged at 30.43%. There are only few farmer samples whose age is between 36 – 41 year old which is averaged at 4.34%. (Table 4.43)

Table 4.43 Age

Age (year)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
30 – 35	2	15.30	-	-	4	17.40	6	13.30
36 – 41	3	23.10	1	11.20	1	4.34	5	11.10
42 – 47	3	23.10	-	-	-	-	3	6.70
48 – 53	1	7.70	4	44.40	7	30.43	12	26.70
54 – 59	1	7.70	2	22.20	8	34.78	11	24.40
Equivalent to or more than 60	3	23.10	2	22.20	3	13.05	8	17.80
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 66 years	Maximum 60 years	Maximum 61 years	Maximum 66 years
Minimum 32 years	Minimum 40 years	Minimum 30 years	Minimum 30 years
Mean 46.46 years	Mean 52.44 years	Mean 50.61 years	Mean 49.78 years
S.D. 10.690	S.D. 6.207	S.D. 10.017	S.D. 9.665

3. Level of education

Large dairy cooperative: It was found that the most of farmer samples have level of education in elementary school grade 4, Secondary school grade 3 and High vocational certificate or diploma which is averaged at 23.10%, and the secondary of level of education in Primary school grade 6 and Secondary school grade 6 or vocational certificate which is averaged at 15.35%. (Table 4.44)

Medium dairy cooperative: It was found that the most of farmer samples have level of education in Secondary school grade 6 or vocational certificate which is averaged at 44.50%, and the secondary level of education in Elementary school grade 4 which is averaged at 22.20%. There are only few farmer samples have level of education in Secondary school grade 3, high vocational certificate or diploma and bachelor degree which is averaged at 11.10%. (Table 4.44)

Small dairy cooperative: It was found that the most of farmer samples have level of education in Secondary school grade 3which is averaged at 39.10%, and the secondary level of education in Elementary school grade 4which is averaged at 21.70%. There are only few farmer samples have level of education in high vocational certificate or diploma which is averaged at 8.70%. (Table 4.44)

Table 4.44 Level of education

Level of education	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Uneducated	-	-	-	-	-	-	-	-
Elementary school grade 4	3	23.10	2	22.20	5	21.70	10	22.20
Primary school grade 6	2	15.35	-	-	-	-	2	4.40
Secondary school grade 3	3	23.10	1	11.10	9	39.10	13	28.90
Secondary school grade 6 or vocational certificate	2	15.35	4	44.50	3	13.00	9	20.00
High vocational certificate or diploma	3	23.10	1	11.10	2	8.70	6	13.40
Bachelor degree	-	-	1	11.10	4	17.50	5	11.10
Total	13	100.00	9	100.00	23	100.00	45	100.00

4. Experience in dairy farming

Large dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 20 years and minimum at 2 years with an average at 10.00 years. The most of farmer samples have experience in dairy farming between 2 – 4 years, between 5 – 7 years and equivalent to or more than 17 years which is averaged at 23.10%, and the secondary span of experience in dairy farming is between 11 – 13 years which is averaged at 15.30%. There are only few farmer samples have experience in dairy farming between 8 – 10 years and between 14 – 16 years which is averaged at 7.70%. (Table 4.45)

Medium dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 12 years and minimum at 3 years with an average at 8.22 years. The most of farmer samples have experience in dairy farming between 8 – 10 years which is averaged at 55.50%, and the secondary span of experience in dairy farming is between 11 – 13 years which is averaged at 22.30%. There are only few farmer samples have experience in dairy farming between 2 4 years and between 5 – 7 years which is averaged at 11.10%. (Table 4.45)

Small dairy cooperative: It was found that the farmer samples have experience in dairy farming maximum at 10 years and minimum at 3 years with an average at 4.74 years. The most of farmer samples have experience in dairy farming between 5 – 7 years which is averaged at 52.10%, and the secondary span of experience in dairy farming is between 2 – 4 years which is averaged at 43.50%. There are only few farmer samples have experience in dairy farming between 8 - 10 years which is averaged at 4.40%. (Table 4.45)

Table 4.45 Experience in dairy farming

Experience in dairy farming (year)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
1 - 5	3	23.10	1	11.10	10	43.50	14	31.10
6 – 10	3	23.10	1	11.10	12	52.10	16	35.60
11 – 15	1	7.70	5	55.50	1	4.40	7	15.60
16 – 20	2	15.30	2	22.30	-	-	4	8.90
21 - 25	1	7.70	-	-	-	-	1	2.20
Equivalent to or more than 17	3	23.10	-	-	-	-	3	6.60
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 20 years	Maximum 12 years	Maximum 10 years	Maximum 20 years
Minimum 2 years	Minimum 3 years	Minimum 3 years	Minimum 2 years
Mean 10.00 years	Mean 8.22 years	Mean 4.74 years	Mean 6.95 years
S.D. 6.416	S.D. 2.773	S.D. 1.484	S.D. 4.400

5. Christian Era which dairy farmer decided quit dairy farming occupation.

Large dairy cooperative: It was found that the most of farmer samples decided quit dairy farming when 2005 – 2006 C.E. which is averaged at 76.90%, and the secondary span of dairy farmer decided quit dairy farming when 2007 – 2008 C.E. which is averaged at 15.40%. There are only few farmer samples decided quit dairy farming when 2003 – 2004 C.E. which is averaged at 7.70%. (Table 4.46)

Medium dairy cooperative: It was found that the most of farmer samples decided quit dairy farming when 2005 – 2006 C.E. and 2007 – 2008 C.E. which is averaged at 33.30%, and the secondary span of dairy farmer decided quit

dairy farming when 2003 – 2004 C.E. which is averaged at 22.20%. There are only few farmer samples decided quit dairy farming when 2001 – 2002 C.E. which is averaged at 11.20%. (Table 4.46)

Small dairy cooperative: It was found that the most of farmer samples decided quit dairy farming when 2005 – 2006 C.E. which is averaged at 65.20%. There are only few farmer samples decided quit dairy farming when 2007 – 2008 C.E. which is averaged at 34.80%. (Table 4.46)

Table 4.46 C.E. which dairy farmer decided quit dairy farming.

C.E.	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
2001 – 2002	-	-	1	11.20	-	-	1	2.20
2003 – 2004	1	7.70	2	22.20	-	-	3	6.70
2005 – 2006	10	76.90	3	33.30	15	65.20	28	62.20
2007 – 2008	2	15.40	3	33.30	8	34.80	13	28.90
Total	13	100.00	9	100.00	23	100.00	45	100.00

6. Knowledge in dairy farming

Large dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in species, blood level of most popular dairy, a good udder, optimal period of artificial insemination, kind of dairy's feed and quality prevention of raw milk. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is first mating of heifer, colostrums feeding for calf and mastitis protection which they chose the correct answer 92.30%. The less knowledgeable issue is proper weight of calf to wean from the mother's milk that they chose the wrong answer 100.00 %. (Table 4.47)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 16.62 score which is in a high level (more than 16.00 scores). The most of farmer sample has high level of knowledge in dairy farming (more than 16.00 scores) averaged at 53.80%. The secondary group who has medium level of knowledge in dairy farming (9.00 - 16.00 scores) is averaged at 46.20%. In this research, it also discovered that the farmers sample of large dairy cooperative gained lowest knowledge in dairy farming at 13 scores and the highest at 19 scores.

Medium dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in vaccination for mouth and feet disease. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is kinds of dairy's feed, optimal period of artificial insemination, colostrums feeding for calf, quality prevention of raw milk and pause milking before dairy deliver in which they chose the correct answer 88.90%. The less knowledgeable issue are housing and shape of a good trait of dairy that they chose the wrong answer 77.80%. (Table 4.47)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 16.22 score which is in a high level (more than 16.00 scores). The most of farmer sample has high level of knowledge in dairy farming (more than 16.00 scores) averaged at 55.60%. The secondary group who has medium level of knowledge in dairy farming (9.00 - 16.00 scores) is averaged at 44.40%. In this research, it also discovered that the farmers samples of medium dairy cooperative gained lowest knowledge in dairy farming at 10 scores and the highest at 20 scores.

Small dairy cooperative: It was found that the most of farmer samples have knowledge in dairy farming in optimal period of artificial insemination, pause milking before dairy deliver, vaccination for mouth and feet disease and quality prevention of raw milk. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is next artificial insemination of parturition in which they chose the correct answer 95.70%. The less knowledgeable issue is retention new dairy that they chose the wrong answer 91.30%. (Table 4.47)

In addition, it also found that the farmer samples have knowledge in dairy farming averaged at 15.70 score which is in a medium level (9.00 - 16.00 scores). The most of farmer samples have medium level of knowledge in dairy farming (9.00 – 16.00 scores) averaged at 73.70%. The secondary group who has high level of knowledge in dairy farming (more than 16.00 scores) is averaged at 26.30%. In this research, it also discovered that the farmers sample of medium dairy cooperative gained lowest knowledge in dairy farming at 12 scores and the highest at 20 scores

Table 4.47 Knowledge in dairy farming

Knowledge in dairy farming	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Dairy housing have to build in north-south line in order to well ventilation	4	30.80	9	69.20	2	22.20	7	77.80	14	60.90	9	39.10
2. Housing have to separate from feces at least 10 meters	10	76.90	3	23.10	5	55.60	4	44.40	19	82.60	4	17.40
3. Dairy farming could co-raising with other livestock in the same area	10	76.90	3	23.10	7	77.80	2	22.20	19	82.60	4	17.40
4. Popular dairy breed are hybrid of Holstein – Friesian with a level of breed more than 75%	13	100.00	-	-	7	77.80	2	22.20	21	91.30	2	8.70
5. Shape of a good trait of dairy from head to bottom are square even though view from the top or side	4	30.80	9	69.20	2	22.20	7	77.80	4	17.40	19	82.60
6. A good udder shouldn't too large till flabby, width, depth and attach to the body resemble to dish-shaped udder	13	100.00	-	-	5	55.60	4	44.40	16	69.60	7	30.40
7. First mating of heifer start at 14-18 months in average	12	93.30	1	7.70	8	88.90	1	11.10	20	87.00	3	13.00

Table 4.47 Knowledge in dairy farming (continue)

Knowledge in dairy farming	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
8. Optimal period of artificial insemination are12-18 hours after estrus	13	100.00	-	-	8	88.90	1	11.10	23	100.00	-	-
9. Next artificial insemination of parturition are the first estrus	13	100.00	-	-	8	88.90	1	11.10	22	95.70	1	4.30
10. Dairy's feed divided into 2 types i.e concentrate and roughage	13	100.00	-	-	7	77.80	2	22.20	17	73.90	6	26.10
11. Concentrate feeding based on dairy give a raw milk 2 kg per feed 1 kg.	7	53.80	6	46.20	5	55.60	4	44.40	9	39.10	14	60.90
12. Solution for less appetite in summer season by alternate feed formula through reduce energy and protein (reduce concentrate)	9	69.20	4	30.80	4	44.40	5	55.60	11	47.80	12	52.20
13. Parturition weight 400 kg. should give fresh grass 22.4 kg. per day	7	53.80	6	46.20	3	33.30	6	66.70	14	60.90	9	39.10
14. Area of pasture for dairy farming should be 1 rai / 2 dairy	5	38.50	8	61.50	6	66.70	3	33.30	8	34.80	15	65.20

Table 4.47 Knowledge in dairy farming (continue)

Knowledge in dairy farming	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15. Ratio of urea-treated rice straw are 100 : 100 : 10 (straw: water: urea) by weight	11	84.60	2	15.40	7	77.80	2	22.20	8	34.80	15	65.20
16. Colostrum feeding immediately within 2 hrs after deliver (2 kg)	12	92.30	1	7.70	8	88.90	1	11.10	19	82.60	4	17.40
17. Optimal calf weight for weaning not less than 50 kg.	-	-	13	100.00	8	88.90	1	11.10	10	43.50	13	56.50
18. Should pause milking about 30 days before deliver	4	30.80	9	69.20	8	88.90	1	11.10	23	100.00	-	-
19. Vaccination for mouth and feet disease twice a year	10	76.90	3	23.10	9	100.00	-	-	23	100.00	-	-
20. Retention new dairy at least 3 days before let them in group	6	46.20	7	53.80	4	44.40	5	55.60	2	8.70	21	91.30
21. Milk that just milking couldn't keep exceed than 3 hours.	13	100.00	-	-	8	88.90	1	11.10	23	100.00	-	-
22. Milking the mastitis dairy before healthy dairy in order to prevent disease spread	12	92.30	1	7.70	6	66.70	3	33.30	22	95.70	1	4.30
23. CMT can't check mastitis with dairy which postpartum for 15 day	7	53.80	6	46.20	7	77.80	2	22.20	11	47.80	12	52.20
24. Teat will close after finished milking about 15 minute	3	23.10	10	76.90	4	44.40	5	55.60	3	13.00	20	87.00

Summarize the score of knowledge in dairy farming	LDC		MDC		SDC	
	No.	%	No.	%	No.	%
Score of knowledge in dairy farming (Total 24 score)						
knowledge in dairy farming in low level (Less than 9.00)	-	-	-	-	-	-
knowledge in dairy farming in medium level. (Between 9.00 – 16.00)	6	46.20	4	44.40	17	73.70
knowledge on dairy farming in high level. (More than 16.00)	7	53.80	5	55.60	6	26.30
Total	13	100.00	9	100.00	23	100.00

	LDC	MDC	SDC
Score Maximum	19	20	20
Score Minimum	13	10	12
Score Mean	16.62	16.22	15.70
Standard Deviation	1.446	2.819	2.032

7. Practice in dairy farming

Large dairy cooperative

It was found that practice in dairy farming in high level towards request the result of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 2.00), milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 2.00), artificial insemination (AI) recording($\overline{X}$ = 1.92), discard leftover feed every morning ($\overline{X}$ = 1.92), always read antibiotic's direction ($\overline{X}$ = 1.92), send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 1.92), checking milking equipment before use ($\overline{X}$ = 1.85), clearly classification of dairy such as calf, growing cattle, heifer etc. ($\overline{X}$ = 1.77), inform officer or take advise when dairy has abnormal symptom ($\overline{X}$ = 1.77), separate sick dairy from healthy immediately ($\overline{X}$ = 1.54), monitoring conception after AI 50 days ($\overline{X}$ = 1.46) and annually sort out from herd ($\overline{X}$ = 1.38) respectively (Table 4.48)

Practice in dairy farming in medium level towards always checking mastitis by CMT before milking ($\overline{X}$ = 1.23), use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 1.23), check up dairy's health before AI ($\overline{X}$ = 1.15), make silage, hay, etc for dry season ($\overline{X}$ = 1.15), wash hand every time before milking the next dairy ($\overline{X}$ = 1.15) and checking concentrate feed before feeding ($\overline{X}$ = 1.00) respectively (Table 4.48)

Practice in dairy farming in low level towards accounting for farm management and reduce cost ($\overline{X}$ = 0.23) and annually send sample of soil and water for checking quality ($\overline{X}$ = 0.00) respectively (Table 4.48)

As a whole, the farmer samples of large dairy cooperative have practice in dairy farming in high level ($\overline{X}$ = 1.45)

Medium dairy cooperative

It was found that practice in dairy farming in high level towards artificial insemination (AI) recording ($\overline{X}$ = 2.00), milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 1.89), separate sick dairy from healthy immediately ($\overline{X}$ = 1.67), inform officer or take advise when dairy has

abnormal symptom ($\overline{X}$ = 1.67) and always read antibiotic's direction ($\overline{X}$ = 1.44) respectively (Table 4.48)

Practice in dairy farming in medium level towards discard leftover feed every morning ($\overline{X}$ = 1.11), checking concentrate feed before feeding ($\overline{X}$ = 1.00), make silage, hay, etc for dry season ($\overline{X}$ = 1.00), always checking mastitis by CMT before milking ($\overline{X}$ = 0.78), checking milking equipment before use ($\overline{X}$ = 0.78), monitoring conception after AI 50 days ($\overline{X}$ = 0.67) and annually sort out from herd ($\overline{X}$ = 0.67) respectively (Table 4.48)

Practice in dairy farming in low level towards send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 0.44), check up dairy's health before AI ($\overline{X}$ = 0.33), accounting for farm management and reduce cost ($\overline{X}$ = 0.33), wash hand every time before milking the next dairy ($\overline{X}$ = 0.22), request the result of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 0.22), use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 0.11), clearly classification of dairy such as calf, growing cattle, heifer etc. ($\overline{X}$ = 1.00) and annually send sample of soil and water for checking quality ($\overline{X}$ = 0.00) respectively (Table 4.48)

As a whole, the farmer samples of medium dairy cooperative have practice in dairy farming in medium level ($\overline{X}$ = 0.82)

Small dairy cooperative

It was found that practice in dairy farming in high level towards milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hours ($\overline{X}$ = 1.96), Artificial Insemination (AI) recording ($\overline{X}$ = 1.44), separate sick dairy from healthy immediately ($\overline{X}$ = 1.70), discard leftover feed every morning ($\overline{X}$ = 1.57) and inform officer or take advise when dairy has abnormal symptom ($\overline{X}$ = 1.52) respectively (Table 4.48)

Practice in dairy farming in medium level towards always read antibiotic's direction ($\overline{X}$ = 1.22), make silage, hay, etc for dry season ($\overline{X}$ = 1.09), send sample of a raw milk to examination for antibiotic residues ($\overline{X}$ = 1.00), monitoring conception after AI 50 days ($\overline{X}$ = 0.91), checking concentrate feed before

feeding ($\overline{X}$ = 0.91), annually sort out from herd ($\overline{X}$ = 0.87), checking milking equipment before use ($\overline{X}$ = 0.83) and always checking mastitis by CMT before milking ($\overline{X}$ = 0.74) respectively (Table 4.48)

Practice in dairy farming in low level towards check up dairy's health before AI ($\overline{X}$ = 0.57), clearly classification of dairy such as calf, growing cattle, heifer etc. ($\overline{X}$ = 0.52), wash hand every time before milking the next dairy ($\overline{X}$ = 0.48), request the result of milk quality from dairy cooperative or government officer concerning ($\overline{X}$ = 0.30), accounting for farm management and reduce cost ($\overline{X}$ = 0.26), use 2 cloths per 1 dairy to clean the udder ($\overline{X}$ = 0.13) and annually send sample of soil and water for checking quality ($\overline{X}$ = 0.04) respectively (Table 4.48)

As a whole, the farmer samples of small dairy cooperative have practice in dairy farming in medium level ($\overline{X}$ = 0.92)

Table 4.48 Level of practice in dairy farming

Level of practice in dairy farming	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice
1.Artificial Insemination (AI) recording	1.92	0.277	High	2.00	0.000	High	1.74	0.541	High
2. Monitoring conception after AI 50 days	1.46	0.660	High	0.67	0.500	Medium	0.91	0.793	Medium
3. Check up dairy's health before AI	1.15	0.801	Medium	0.33	0.500	Low	0.57	0.728	Low
4. Accounting for farm management and reduce cost	0.23	0.599	Low	0.33	0.707	Low	0.26	0.619	Low
5. Clearly classification of dairy such as calf, growing cattle, heifer etc.	1.77	0.599	High	0.00	0.000	Low	0.52	0.730	Low
6. Annually sort out from herd	1.38	0.870	High	0.67	0.500	Medium	0.87	0.694	Medium
7. Checking concentrate feed before feeding	1.00	1.000	Medium	1.00	0.866	Medium	0.91	0.848	Medium
8. Make silage, hay, etc for dry season	1.15	0.899	Medium	1.00	0.707	Medium	1.09	0.900	Medium
9. Discard leftover feed every morning	1.92	0.277	High	1.11	0.782	Medium	1.57	0.590	High
10. Always read antibiotic's direction	1.92	0.277	High	1.44	0.726	High	1.22	0.671	Medium
11. Separate sick dairy from healthy immediately	1.54	0.660	High	1.67	0.500	High	1.70	0.470	High
12. Inform officer or take advise when dairy has abnormal symptom	1.77	0.439	High	1.67	0.500	High	1.52	0.511	High
13. Always checking mastitis by CMT before milking	1.23	0.725	Medium	0.78	0.667	Medium	0.74	0.449	Medium

Table 4.48 Level of practice in dairy farming (continue)

Level of practice in dairy farming	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice	($\overline{X}$)	S.D.	Level of practice
14. Use 2 cloths per 1 dairy to clean the udder	1.23	0.927	Medium	0.11	0.333	Low	0.13	0.458	Low
15. Checking milking equipment before use	1.85	0.555	High	0.78	0.667	Medium	0.83	0.650	Medium
16. Wash hand every time before milking the next dairy	1.15	0.987	Medium	0.22	0.667	Low	0.48	0.790	Low
17. Send sample of a raw milk to examination for antibiotic residues	1.92	0.277	High	0.44	0.527	Low	1.00	0.739	Medium
18. Request the result of milk quality from Dairy Cooperative or government officer concerning	2.00	0.000	High	0.22	0.667	Low	0.30	0.703	Low
19. Annually Send sample of soil and water for checking quality	0.00	0.000	Low	0.00	0.000	Low	0.04	0.209	Low
20. Milking and delivering a raw milk to Milk Collecting Center not exceed than 3 hour	2.00	0.000	High	1.89	0.333	High	1.96	0.209	High
Total	**1.45**	**0.182**	**High**	**0.82**	**0.202**	**Medium**	**0.92**	**0.324**	**Medium**

Remark Divide level of dairy farmers' practice in dairy farming in upper northern Thailand total 3 levels including
Practice in dairy farming in low level. (0.00 – 0.66 score)
Practice in dairy farming in medium level.(0.67 – 1.33 score)
Practice in dairy farming in high level. (1.34 – 2.00 score)

Economic factors

8. Number of family member (include farmer)

Large dairy cooperative: It was found that the farmer samples have number of family member maximum at 6 persons and minimum at 1 persons with an average at 3.69 persons. The most of farmer samples have family members between 3 – 4 persons which is averaged at 69.30%, and the secondary span of family members is between 5 – 6 persons which is averaged at 23.00%. There are only few farmer samples have family members between 1 – 2 persons which is averaged at 7.70%. (Table 4.49)

Medium dairy cooperative: It was found that the farmer samples have number of family member maximum at 2 persons and minimum at 1 persons with an average at 1.89 persons. The all of farmer samples have family members between 1 – 2 persons which is averaged at 100.00%. (Table 4.49)

Small dairy cooperative: It was found that the farmer samples have number of family member maximum at 5 persons and minimum at 2 persons with an average at 3.13 persons. The most of farmer samples have family member between 3 – 4 persons which is averaged at 60.80%, and the secondary span of family members is between 1 – 2 persons which is averaged at 34.80%. There are only few farmer samples have family members between 5 - 6 persons which is averaged at 4.40%. (Table 4.49)

Table 4.49 Number of family member (include farmer)

Number of family member (person)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
1 - 2	1	7.70	9	100.00	8	34.80	18	40.00
3 – 4	9	69.30	-	-	14	60.80	23	51.10
5 – 6	3	23.00	-	-	1	4.40	4	8.90
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 6 person	Maximum 2 person	Maximum 5 person	Maximum 6 person
Minimum 1 person	Minimum 1 person	Minimum 2 person	Minimum 1 person
Mean 3.69 person	Mean 1.89 person	Mean 3.13 person	Mean 3.04 person
S.D. 1.251	S.D. 0.333	S.D. 0.968	S.D. 1.147

9. Number of labours for dairy farming

Large dairy cooperative: It was found that the farmer samples have number of labours for dairy farming maximum at 4 persons and minimum at 1 persons with an average at 2.31 persons. The most of farmer samples have labours for dairy farming between 1 – 2 persons which is averaged at 69.20%, and the secondary span of labours for dairy farming is between 3 – 4 persons which is averaged at 30.80%. (Table 4.50)

Medium dairy cooperative: It was found that the farmer samples have number of family labours for dairy farming maximum at 2 persons and minimum at 1 persons with an average at 1.78 persons. The most of farmer samples have labours for dairy farming between 1 – 2 persons which is averaged at 95.60%, and has labours for dairy farming between 3 – 4 persons which is averaged at 4.40%. (Table 4.50)

Small dairy cooperative: It was found that the farmer samples have number of family labours for dairy farming maximum at 3 persons and minimum at 1 persons with an average at 1.57 persons. The most of farmer samples have labours for dairy farming between 1 – 2 persons which is averaged at 95.60%, and has labours for dairy farming between 3 – 4 persons which is averaged at 4.40%. (Table 4.50)

Table 4.50 Number of labours for dairy farming

Number of labours for dairy farming (person)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
1 - 2	9	69.20	9	100.00	22	95.60	40	88.90
3 – 4	4	30.80	-	-	1	4.40	5	11.10
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 4 person	Maximum 2 person	Maximum 3 person	Maximum 4 person
Minimum 1 person	Minimum 1 person	Minimum 1 person	Minimum 1 person
Mean 2.31 person	Mean 1.78 person	Mean 1.57 person	Mean 1.82 person
S.D. 0.751	S.D. 0.441	S.D. 0.590	S.D. 0.684

10. Feature of dairy farming in the past

Large dairy cooperative: The most of farmer samples have feature of dairy farming in the past is primary occupation which is averaged at 84.60%, and the secondary, is secondary occupation which is averaged at 15.40%. (Table 4.51)

Medium dairy cooperative: The most of farmer samples have feature of dairy farming in the past is secondary occupation which is averaged at 55.60%, and the secondary, is primary occupation which is averaged at 44.40%. (Table 4.51)

Small dairy cooperative: The most of farmer samples have feature of dairy farming in the past is primary occupation which is averaged at 87.00%, and the secondary, is secondary occupation which is averaged at 13.00%. (Table 4.51)

Table 4.51 Feature of dairy farming in the past

Feature of dairy farming in the past	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Primary Occupation	11	84.60	4	44.40	20	87.00	35	77.80
Secondary Occupation	2	15.40	5	55.60	3	13.00	10	22.20
Total	13	100.00	9	100.00	23	100.00	45	100.00

10. Total Outstanding debts (approximately)

Large dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 500,000 Baht and minimum at 60,000 Baht with an average at 185,375.00 Baht. The most of farmer samples do not have outstanding debts which is averaged at 38.40%, and the secondary, the farmer samples have total outstanding debts less than or equivalent to 100,000 Baht and between 100,001 – 250,000 Baht which is averaged at 23.10%. There are only few farmer samples have total outstanding debts between 250,001 – 400,000 Baht and between 400,001 – 550,000 Baht which is averaged at 7.70%. (Table 4.52)

Medium dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 500,000 Baht and minimum at 50,000 Baht with an average at 207,142.86 Baht. The most of farmer samples have outstanding debts less than or equivalent to 100,000 Baht and between 100,001 – 250,000 Bath which is averaged at 33.30%, and the secondary, the farmer samples do not have total outstanding debts which is averaged at 22.20%. There are only few farmer samples have total outstanding debts between 400,001 – 550,000 Baht which is averaged at 11.20%. (Table 4.52)

Small dairy cooperative: It was found that the farmer samples have total outstanding debts maximum at 1,000,000 Baht and minimum at 15,000 Baht with an average at 351,714.29 Baht. The most of farmer samples have total outstanding debts between 100,001 – 250,000 Baht which is averaged at 30.30%, and the secondary, the farmer samples have total outstanding debts between 250,001 – 400,000 Baht which is averaged at 21.60%. There are only few farmer samples have total outstanding debts between 550,001 – 700,000 Baht which is averaged at 4.30%. (Table 4.52)

Table 4.52 Total Outstanding debts (after decided quit dairy farming)

Total Outstanding debts (Baht)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Do not have debts	5	38.40	2	22.20	2	8.70	9	20.00
Less than or equivalent to 100,000	3	23.10	3	33.30	3	13.20	9	20.00
100,001 – 250,000	3	23.10	3	33.30	7	30.30	13	28.90
250,001 – 400,000	1	7.70	-	-	5	21.60	6	13.30
250,001 – 400,000	1	7.70	1	11.20	2	8.70	4	8.90
550,001 – 700,000	-	-	-	-	1	4.30	1	2.20
equivalent to or more than 700,001	-	-	-	-	3	13.20	3	6.70
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 500,000 Baht	Maximum 500,000 Baht	Maximum 1,000,000 Baht	Maximum 1,000,000 Baht
Minimum 60,000 Baht	Minimum 50,000 Baht	Minimum 15,000 Baht	Minimum 15,000 Baht
Mean 185,375.00 Baht	Mean 207,142.86 Baht	Mean 351,714.29 Baht	Mean 286,638.89 Baht
S.D. 144,188.371	S.D. 151,185.789	S.D. 257,728.056	S.D. 228,238.492

Social factors

11. Occupying in dairy cooperative position

Large dairy cooperative: It was found that the most of farmer samples who do not occupy any position in dairy cooperative is averaged at 76.90% and the secondary, the farmer samples who occupies a committee in dairy cooperative which is averaged at 23.00%. (Table 4.53)

Medium dairy cooperative: It was found that the most of farmer samples who do not occupy any position in dairy cooperative which is averaged at 66.70% and the secondary, the farmer samples who serve as a committee which is averaged at 33.30%. (Table 4.53)

Small dairy cooperative: It was found that the most of farmer samples who do not occupy any position in dairy cooperative position which is averaged at 47.80% and the secondary, the farmer samples who occupies a committee position in dairy cooperative which is averaged at 21.70% respectively**.** There are only few farmers who serve as a secretary in dairy cooperative which is averaged at 4.30% (Table 4.53)

Table 4.53 Occupying in dairy cooperative position

Occupying in dairy cooperative position	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Do not occupy in position	10	76.90	6	66.70	11	47.80	27	60.00
Vice President	-	-	-	-	3	13.10	3	6.70
Secretary	-	-	-	-	1	4.30	1	2.20
Treasurer	-	-	-	-	3	13.10	3	6.70
Committee	3	23.10	3	33.30	5	21.70	11	24.40
Total	13	100.00	9	100.00	23	100.00	45	100.00

12. Occupying in social position

Large dairy cooperative: It was found that the most of farmer samples who do not occupy any social position which is averaged at 84.60% and the secondary, the farmer samples who occupies a village headman or assistant and committee of Sub district Administration Organization position which is averaged at 7.70%. (Table 4.54)

Medium dairy cooperative: It was found that the all of farmer samples who do not occupy any social position which is averaged at 100.00%. (Table 4.54)

Small dairy cooperative: It was found that the all of farmer samples who do not occupy any social position which is averaged at 100.00%. (Table 4.54)

Table 4.54 Occupying in social position

Occupying in social position	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Do not occupy in social position	11	84.60	9	100.00	23	100.00	43	95.60
Village headman or assistant committee of Sub district Administration Organization	1	7.70	-	-	-	-	1	2.20
	1	7.70	-	-	-	-	1	2.20
Total	13	100.00	9	100.00	23	100.00	45	100.00

13. Participation in various activities of dairy cooperative

Large dairy cooperative

Participation in the activities of dairy cooperative in high level towards group meeting attendance ($\overline{X}$ = 1.92), always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 1.92) and annual general meeting attendance ($\overline{X}$ = 1.69) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in medium level towards joined in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 1.23) and meeting and training about dairy farming ($\overline{X}$ = 1.00) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in low level towards proposed opinion, problem's solution in the meeting ($\overline{X}$ = 0.46), used to be representative of cooperative in government activity such as training ($\overline{X}$ = 0.38), meeting and training about principle of Dairy Cooperative operation attendance ($\overline{X}$ = 0.23), purchase additional shares ($\overline{X}$ = 0.23) and recommended other member to purchase additional shares ($\overline{X}$ = 0.08) respectively. (Table 4.55)

As a whole, the farmer samples of large dairy cooperative have participation in the activities of dairy cooperative in medium level ($\overline{X}$ = 0.99)

Medium dairy cooperative

Participation in the activities of dairy cooperative in high level towards annual general meeting attendance ($\overline{X}$ = 2.00) and always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 1.56) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in medium level towards group meeting attendance ($\overline{X}$ = 1.33), joined in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 1.00) and meeting and training about dairy farming ($\overline{X}$ = 1.89) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in low level towards meeting and training about principle of dairy cooperative operation attendance ($\overline{X}$ = 0.44), purchase additional shares ($\overline{X}$ = 0.33), recommended other member to purchase additional shares ($\overline{X}$ = 0.33), proposed opinion, problem's solution in the meeting ($\overline{X}$ = 0.33) and used to be representative of cooperative in government activity such as training ($\overline{X}$ = 0.22) respectively. (Table 4.55)

As a whole, the farmer samples of medium dairy cooperative have participation in the activities of dairy cooperative in medium level ($\overline{X}$ = 0.90)

Small dairy cooperative

Participation in the activities of dairy cooperative in high level towards annual general meeting attendance ($\overline{X}$ = 2.00), always pay attention in quality milk production such as correct and clean milking ($\overline{X}$ = 2.00) and group meeting attendance ($\overline{X}$ = 1.78) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in medium level towards join in social activity of cooperative such as cooperative anniversary, children day ($\overline{X}$ = 0.78) and meeting and training about dairy farming ($\overline{X}$ = 0.70) respectively. (Table 4.55)

Participation in the activities of dairy cooperative in low level towards propose opinion, problem's solution in the meeting ($\overline{X}$ = 0.39), meeting and training about principle of dairy cooperative operation attendance ($\overline{X}$ = 0.30), purchase additional shares ($\overline{X}$ = 0.13), used to be representative of cooperative in

government activity such as training ($\overline{X}$ = 0.04) and recommended other member to purchase additional shares ($\overline{X}$ = 0.00) respectively. (Table 4.55)

As a whole, the farmer samples of small dairy cooperative have participation in the activities of dairy cooperative in medium level ($\overline{X}$ = 0.89)

Table 4.55 Level of participation in various activities of dairy cooperative

Level of participation in various activities of Dairy Cooperative	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of participation	($\overline{X}$)	S.D.	Level of participation	($\overline{X}$)	S.D.	Level of participation
1. Group Meeting attendance	1.92	0.277	High	1.33	0.707	Medium	1.78	0.422	High
2. Annual general meeting attendance	1.69	0.630	High	2.00	0.000	High	2.00	0.000	High
3. Meeting and training about principle of Dairy Cooperative operation attendance	0.23	0.439	Low	0.44	0.726	Low	0.30	0.635	Low
4. Meeting and training about dairy farming	1.00	0.577	Medium	0.89	0.782	Medium	0.70	0.559	Medium
5. Purchase additional shares	0.23	0.599	Low	0.33	0.707	Low	0.13	0.458	Low
6. You have been recommended other member to purchase additional shares	0.08	0.277	Low	0.33	0.707	Low	0.00	0.000	Low
7. You have been proposed opinion, problem's solution in the meeting	0.46	0.660	Low	0.33	0.500	Low	0.39	0.499	Low
8. You always pay attention in quality milk production such as correct and clean milking	1.92	0.277	High	1.56	0.527	High	2.00	0.000	High
9. You have been joined in social activity of cooperative such as cooperative anniversary, Children day	1.23	0.599	Medium	1.00	0.500	Medium	0.78	0.671	Medium
10. You used to be representative of cooperative in government activity such as training	0.38	0.650	Low	0.22	0.441	Low	0.04	0.209	Low
Total	**0.99**	**0.302**	**Medium**	**0.90**	**0.301**	**Medium**	**0.89**	**0.207**	**Medium**

Remark Divide level of dairy farmers' participation in various activities of Dairy Cooperative in Upper Northern Thailand total 3 levels including

Participation in the activities of Dairy Cooperative in low level.
(0.00 – 0.66 score)

Participation in the activities of Dairy Cooperative in medium level.
(0.67 – 1.33 score)

Participation in the activities of Dairy Cooperative in high level.
(1.34 – 2.00 score)

14. Acquire information about dairy farming from various medias

Large dairy cooperative: It was found that the most of farmer samples received information about dairy farming from communication board of dairy cooperative which is averaged at 92.30%, and the secondary, the farmer samples received information about dairy farming from television which is averaged at 81.50%. There are only few farmers received information about dairy farming from livestock magazine and internet which is averaged at 7.70%. (Table 4.56)

Medium dairy cooperative: It was found that the most of farmer samples receive information about dairy farming from communication board of dairy cooperative which is averaged at 89.90%, and the secondary, the farmer samples received information about dairy farming from farmer's friend which is averaged at 66.70%. There are only few farmers received information about dairy farming from brochure/document, newspaper, livestock magazine and internet which is averaged at 11.10%. (Table 4.56)

Small dairy cooperative: It was found that the most of farmer samples received information about dairy farming from communication board of dairy cooperative which is averaged at 100.00%, and the secondary, the farmer samples received information about dairy farming from farmer's friend which is averaged at 91.30%. There are only few farmers received information about dairy farming from livestock magazine which is averaged at 8.70%. (Table 4.56)

Table 4.56 Acquire information about dairy farming from various medias (number of time per month)

Source of information[1/]	LDC (n = 13)					MDC (n = 9)					SDC (n = 23)				
	Receipt		Never receipt		$\bar{X}$	Receipt		Never receipt		$\bar{X}$	Receipt		Never receipt		$\bar{X}$
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Brochure/Document	5	38.50	8	61.50	2.00	1	11.10	8	88.90	2.00	7	30.40	16	69.60	1.57
Newspaper	5	38.50	8	61.50	1.40	1	11.10	8	88.90	1.00	8	34.80	15	65.20	1.38
Livestock magazine	1	7.70	12	92.30	3.00	1	11.10	8	88.90	2.00	2	8.70	21	91.30	1.00
Radio	6	46.20	7	53.80	4.00	1	11.10	8	88.90	1.00	6	26.10	17	73.90	2.00
Television	8	61.50	5	38.50	1.63	-	-	9	100.00	-	14	60.90	9	39.10	2.21
Farmer's friend	7	53.80	6	46.20	6.00	6	66.70	3	33.30	4.33	21	91.30	2	8.70	5.43
Communication board of Dairy Cooperative	12	92.30	1	7.70	4.00	8	88.90	1	11.10	4.38	23	100.00	-	-	2.83
Internet	1	7.70	12	92.30	1.00	-	-	9	100.00	-	4	17.40	19	82.60	3.00

Remark: [1/] Could answer more than 1 item

15. Communication with officer concerning dairy farming

Large dairy cooperative: It was found that the most of farmer samples communicated with artificial insemination volunteer which is averaged at 100.00%, and the secondary, the farmer samples communicated with dairy cooperative officer which is averaged at 84.60%. There are only few farmer samples communicated with representative from company which is averaged at 7.70%. (Table 4.57)

Medium dairy cooperative: It was found that the most of farmer samples communicated with dairy cooperative officer which is averaged at 100.00%, and the secondary, the farmer samples communicated with artificial insemination volunteer which is averaged at 88.90%. There are only few farmer samples communicated with district artificial insemination officer which is averaged at 11.10%. (Table 4.57)

Small dairy cooperative: It was found that the most of farmer samples communicated with artificial insemination volunteer and dairy cooperative officer which is averaged at 69.60%, and the secondary, the farmer samples communicated with district livestock officer which is averaged at 43.50. There are only few farmer samples communicated with representative from company which is averaged at 4.30%. (Table 4.57)

Table 4.57 Communication with officer concerning dairy farming (number of time per month)

Officer[1/]	LDC (n = 13)					MDC (n = 9)					SDC (n = 23)				
	Communicate		Never		$\overline{X}$	Communicate		Never		$\overline{X}$	Communicate		Never		$\overline{X}$
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
District Livestock Officer	8	61.50	5	38.50	1.25	1	11.1	8	88.90	1.00	4	17.40	19	82.60	2.25
District Artificial Insemination Officer	10	76.90	3	23.10	1.90	4	44.40	5	55.60	2.25	10	43.50	13	56.50	2.50
Artificial Insemination Volunteer	13	100.00	-	-	3.15	8	88.90	1	11.10	1.88	16	69.60	7	30.40	4.38
Lecturer of academy	3	23.10	10	76.90	1.00	-	-	9	100.00	-	-	-	23	100.00	-
Dairy Cooperative Officer	11	84.60	2	15.40	4.00	9	100.00	-	-	4.00	16	69.60	7	30.40	3.19
Representative from company	1	7.70	12	92.30	1.00	-	-	9	100.00	-	1	4.30	22	95.70	1.00
Other government officer	-	-	13	100.00	-	-	-	9	100.00	-	-	-	23	100.00	-

Remark: [1/] Could answer more than 1 item

Dairy farming operation factors

16. Size of dairy cooperative

Large dairy cooperative: dairy cooperative has members more than 61 members such as Chiang Mai Dairy Cooperative, Chaiprakarn Dairy Cooperative, Maeon Dairy Cooperative, Maejo Dairy Cooperative,and Lamphun Dairy Cooperative total 5 Large Dairy Cooperative in Upper Northern Thailand which have farmers who quit dairy farming and used to be a members of the dairy cooperative total 68 persons. The researcher used sampling size is 41 persons but the researcher collected data 13 persons which is averaged at 26.53%. (Table 4.58)

Medium dairy cooperative: dairy cooperative has members between 21 to 60 members such as Sankampang dairy farmers groups, Ban Pa Tung-Huay Mor Dairy Cooperative, Chiang Rai Dairy Cooperative, Phatat Doi Pa Tang Dairy Cooperative, Banta Dairy Cooperative, Maelao Dairy Cooperative, Banhong samphan 1 Dairy Cooperative and Maewang Dairy Cooperative total 8 Medium Dairy Cooperative in Upper Northern Thailand which have farmers who quit dairy farming and used to be a members of the dairy cooperative total 58 persons. The researcher used sampling size is 41 persons but the researcher collected data 9 persons which is averaged at 21.65%. (Table 4.58)

Small dairy cooperative: dairy cooperative has members less than 20 members such as Fang Dairy Cooperative, Hariphunchai Dairy Cooperative, Maetha Dairy Cooperative, Phrae Dairy Cooperative and Long Dairy Cooperative total 5 Small Dairy Cooperatives in Upper Northern Thailand which have farmers who quit dairy farming and used to be a members of the dairy cooperative total 35 persons. The researcher used sampling size is 25 persons but the researcher collected data 23 persons which is averaged at 92.00%. (Table 4.58)

Table 4.58 Size of dairy cooperative

Size of dairy cooperative	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Small dairy farming	8	61.50	8	88.90	19	82.60	35	77.80
Medium dairy farming	5	38.50	1	11.10	4	17.40	10	22.20
Total	13	100.00	9	100.00	23	100.00	45	100.00

17. Style of dairy farming

Large dairy cooperative: It was found that the most of farmer samples have tying style of dairy farming which is averaged at 92.30% and the secondary, leasing in cote or courtyard style of dairy farming which is averaged at 7.70% respectively**.** (Table 4.59)

Medium dairy cooperative: It was found that the most of farmer samples have tying style of dairy farming which is averaged at 88.90% and the secondary, leasing in cote or courtyard style of dairy farming which is averaged at 11.10%. (Table 4.59)

Small dairy cooperative: It was found that the most of farmer samples have tying style of dairy farming which is averaged at 56.50% and the secondary, leasing in cote or courtyard style of dairy farming which is averaged at 43.50%. (Table 4.59)

Table 4.59 Style of dairy farming

Style of dairy farming	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Leasing in cote or courtyard	1	7.70	1	11.10	10	43.50	12	26.70
Tying	12	92.30	8	88.90	13	56.50	33	73.30
Total	13	100.00	9	100.00	23	100.00	45	100.00

18. Number of dairy replacement (calf, growing calf and heifer) in farm

Large dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 22 dairies and minimum at 7 dairy with an average at 13.17 dairies. The most of farmer samples have number of dairy

replacement between 13 – 16 dairies which is averaged at 46.10%, and the secondary, the farmer samples have number of dairy replacement is between 9 – 12 dairies which is averaged at 38.50%. There are only few farmer samples have number of dairy replacement between 5 – 8 dairies and equivalent to or more than 21dairies which is averaged at 7.70%. (Table 4.60)

Medium dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 12 dairies and minimum at 2 dairy with an average at 4.78 dairies. The most of farmer samples have number of dairy replacement between 1 – 4 dairies which is averaged at 55.50%, and the secondary, the farmer samples have number of dairy replacement is between 5 – 8 dairies which is averaged at 33.30%. There are only few farmer samples have number of dairy replacement between 9 – 12 dairies which is averaged at 11.20%. (Table 4.60)

Small dairy cooperative: It was found that the farmer samples have number of dairy replacement maximum at 28 dairies and minimum at 2 dairy with an average at 8.09 dairies. The most of farmer samples have number of dairy replacement between 1 – 4 dairies and between 5 – 8 dairies which is averaged at 34.70%, and the secondary, the farmer samples have number of dairy replacement is between 9 – 12 dairies which is averaged at 17.40%. There are only few farmer samples have number of dairy replacement between 13 – 16 dairies which is averaged at 4.30%. (Table 4.60)

Table 4.60 Number of dairy replacement (calf, growing calf and heifer) in farm

Number of dairy replacement (dairy)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
1 – 4	-	-	5	55.50	8	34.70	13	28.90
5 – 8	1	7.70	3	33.30	8	34.70	12	26.70
9 – 12	5	38.50	1	11.20	4	17.40	10	22.20
13 – 16	6	46.10	-	-	1	4.30	7	15.60
17 – 20	-	-	-	-	-	-	-	-
equivalent to or more than 21	1	7.70	-	-	2	8.90	3	6.60
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 22 dairy	Maximum 12 dairy	Maximum 28 dairy	Maximum28dairy
Minimum 7 dairy	Minimum 2 dairy	Minimum 2 dairy	Minimum 2 dairy
Mean 12.92 dairy	Mean 4.78 dairy	Mean 8.09 dairy	Mean 8.82 dairy
S.D. 3.639	S.D. 3.383	S.D. 6.438	S.D. 5.917

19. Number of dairy (milking dairy and dry dairy) in farm

Large dairy cooperative: It was found that the farmer samples have number of dairy maximum at 28 dairies and minimum at 9 dairy with an average at 18.31 dairies. The most of farmer samples have number of dairy between 9 – 14 dairies which is averaged at 38.50%, and the secondary, that the farmer samples have number of dairy is between 21 – 26 dairies which is averaged at 30.80%. There are only few farmer samples have number of dairy between 27 – 32 dairies which is averaged at 7.60%. (Table 4.61)

Medium dairy cooperative: It was found that the farmer samples have number of dairy maximum at 28 dairies and minimum at 4 dairies with an average at 10.89 dairies. The most of farmer samples have number of dairy between 3 – 8 dairies which is averaged at 44.40%, and the secondary, the farmer samples have number of dairy is between 9 – 14 dairies which is averaged at 33.40%. There are only few farmer samples have number of dairy between 15 – 20 dairies and between 27 – 32 dairies which is averaged at 11.10%. (Table 4.61)

Small dairy cooperative: It was found that the farmer samples have number of dairy maximum at 36 dairies and minimum at 3 dairies with an average at 12.17 dairies. The most of farmer samples have number of dairy between 3 – 8 dairies which is averaged at 43.40%, and the secondary, the farmer samples have number of dairy is between 9 – 14 dairies which is averaged at 39.10%. There are only few farmer samples have number of dairy between 21 – 26 dairies and equivalent to or more than 33 which is averaged at 4.40%. (Table 4.61)

Table 4.61 Number of dairy (milking dairy and dry dairy) in farm

Number of dairy (dairy)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
3 – 8	-	-	4	44.40	10	43.40	14	31.10
9 – 14	5	38.50	3	33.40	9	39.10	17	37.80
15 – 20	3	23.10	1	11.10	-	-	4	8.90
21 – 26	4	30.80	-	-	1	4.40	5	11.10
27 – 32	1	7.60	1	11.10	2	8.70	4	8.90
equivalent to or more than 33	-	-	-	-	1	4.40	1	2.20
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 28 dairy	Maximum 29 dairy	Maximum 36 dairy	Maximum 36 dairy
Minimum 9 dairy	Minimum 4 dairy	Minimum 3 dairy	Minimum 3 dairy
Mean 18.31 dairy	Mean 10.89 dairy	Mean 12.17 dairy	Mean 13.69 dairy
S.D. 6.074	S.D. 7.881	S.D. 8.521	S.D. 8.171

20. Capability on milk production of dairy (kg./dairy/day)

Large dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 12.00 kg./dairy/day and minimum at 9.00 kg./dairy/day with an average at 10.62 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 9.61 – 11.08 kg./dairy/day which is averaged at 53.90%, and the secondary span of capability on milk production of dairy is equivalent to or more than 11.09 kg./dairy/day which is averaged at 30.70%. There are only few farmer samples have capability on milk production of dairy between 8.13 – 9.60 kg./dairy/day which is averaged at 15.40%. (Table 4.62)

Medium dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 11.00 kg./dairy/day and minimum at 7.50 kg./dairy/day with an average at 9.22 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 9.61 – 11.08 kg./dairy/day which is averaged at 55.60%, and the secondary span of capability on milk production of dairy between 6.65 – 8.12 kg./dairy/day which is averaged at

33.30%. There are only few farmer samples have capability on milk production of dairy between 8.13 – 9.60 kg./dairy/day which is averaged at 11.10%. (Table 4.62)

Small dairy cooperative: It was found that the farmer samples have capability on milk production of dairy maximum at 12.50 kg./dairy/day and minimum at 5.17 kg./dairy/day with an average at 9.60 kg./dairy/day. The most of farmer samples have capability on milk production of dairy between 9.61 – 11.08 kg./dairy/day which is averaged at 34.80%, and the secondary span of capability on milk production of dairy between 8.13 – 9.60 kg./dairy/day which is averaged at 26.10%. There are only few farmer samples have capability on milk production of dairy between 5.17 – 6.64 kg./dairy/day which is averaged at 4.30%. (Table 4.62)

Table 4.62 Capability on milk production of dairy (kg./dairy/day)

Capability on milk production of dairy (kg./dairy/day)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
5.17 – 6.64	-	-	-	-	1	4.30	1	2.20
6.65 – 8.12	-	-	3	33.30	4	17.40	7	15.60
8.13 – 9.60	2	15.40	1	11.10	6	26.10	9	20.00
9.61 – 11.08	7	53.90	5	55.60	8	34.80	20	44.40
equivalent to or more than 11.09	4	30.70	-	-	4	17.40	8	17.80
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 12.00 kg/dairy/day	Maximum 11.00 kg/dairy/day	Maximum 12.50 kg/dairy/day	Maximum 12.50 kg/dairy/day
Minimum 9.00 kg/dairy/day	Minimum 7.50 kg/dairy/day	Minimum 5.17 kg/dairy/day	Minimum 5.17 kg/dairy/day
Mean 10.62 kg/dairy/day	Mean 9.22 kg/dairy/day	Mean 9.60 kg/dairy/day	Mean 9.82 kg/dairy/day
S.D. 0.997	S.D. 1.277	S.D. 1.697	S.D. 1.515

21. Purchase price of raw milk (baht / kg.)

Large dairy Cooperative: It was found that the farmer samples is offered a purchase price of raw milk maximum at 10.50 Baht/kg. and minimum at 9.00 Baht/kg. with an average at 9.73 Baht/kg. The most of farmer samples is offered a purchase price of raw milk between 9.22 – 10.30 Baht/kg. which is averaged at 46.20%, and the secondary span of a purchase price of raw milk is between 8.11 – 9.21 Baht/kg which is averaged at 30.80%. There are only few farmer samples

is offered a purchase price of raw milk between 10.33 – 11.43 Baht/kg which is averaged at 23.00%. (Table 4.63)

Medium dairy Cooperative: It was found that the farmer samples is offered a purchase price of raw milk maximum at 12.50 Baht/kg. and minimum at 7.00 Baht/kg. with an average at 9.61 Baht/kg. The most of farmer sample is offered a purchase price of raw milk between 8.11 – 9.21 Baht/kg. which is averaged at 33.40%, and the secondary span of a purchase price of raw milk is between 7.00 – 8.10 Baht/kg and between 10.33 – 11.43 Baht/kg which is averaged at 22.20%. There are only few farmer samples is offered a purchase price of raw milk between 9.22 – 10.32 Baht/kg and equivalent to or more than 11.44 baht/kg. which is averaged at 11.10%. (Table 4.63)

Small dairy Cooperative: It was found that the farmer sample is offered a purchase price of raw milk maximum at 12.50 Baht/kg. and minimum at 9.00 Baht/kg. with an average at 10.46 Baht/kg. The most of farmer sample is offered a purchase price of raw milk between 9.22 – 10.30 Baht/kg. which is averaged at 60.80%, and the secondary span of a purchase price of raw milk is between 7.00 – 8.10 Baht/kg and between 10.33 – 11.43 Baht/kg and equivalent to or more than 11.44 Baht/kg. which is averaged at 17.40%. There are only few farmer samples is offered a purchase price of raw milk between 8.11 – 9.21 Baht/kg and which is averaged at 4.40%. (Table 4.63)

Table 4.63 Purchase price of raw milk (Baht / kg.)

Purchase price of raw milk (Baht / kg.)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
7.00 – 8.10	-	-	2	22.20	-	-	2	4.40
8.11 – 9.21	4	30.80	3	33.40	1	4.40	8	17.80
9.22 – 10.32	6	46.20	1	11.10	14	60.80	21	46.70
10.33 – 11.43	3	23.00	2	22.20	4	17.40	9	20.00
equivalent to or more than 11.44	-	-	1	11.10	4	17.40	5	11.10
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 10.50 Baht/kg.	Maximum 12.50 Baht/kg.	Maximum 12.50 Baht/kg.	Maximum 12.50 Baht/kg.
Minimum 9.00 Baht/kg.	Minimum 7.00 Baht/kg.	Minimum 9.00 Baht/kg.	Minimum 7.00 Baht/kg.
Mean 9.73 Baht/kg.	Mean 9.61 Baht/kg.	Mean 10.46 Baht/kg.	Mean 10.01 Baht/kg.
S.D. 0.599	S.D. 1.169	S.D. 0.903	S.D. 1.087

22. Farm land owning for dairy farming

Large dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 18.00 Rai and minimum at 2.00 Rai with an average at 5.90 Rai. The most of farmer samples have farm land for dairy farming between 2.00 – 6.00 Rai which is averaged at 76.90%, and the secondary span of farm land for dairy farming is between 6.01 – 10.00 Rai, between 10.01 – 15.00 Rai and between 15.01 – 20.00 rai which is averaged at 7.70%. (Table 4.64)

Medium dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 15.50 Rai and minimum at 2.00 Rai with an average at 6.44 Rai. The most of farmer samples have farm land for dairy farming between 2.00 – 6.00 Rai which is averaged at 55.50%, and the secondary span of farm land for dairy farming is between 6.01 – 10.00 Rai which is averaged at 33.30%. There are only few farmer samples have farm land for dairy farming between 10.01 – 15.00 Rai which is averaged at 11.20%. (Table 4.64)

Small Dairy cooperative: It was found that the farmer samples have farm land for dairy farming maximum at 30.00 Rai and minimum at 2.00 Rai with an average at 11.80 Rai. The most of farmer samples have farm land for dairy farming between 2.00 – 6.00 Rai which is averaged at 39.10%, and the secondary span of farm land for dairy farming is between 6.01 – 10.00 Rai and between 15.01 – 20.00 Rai which is averaged at 17.40%. There are only few farmer samples have farm land for dairy farming equivalent to or more than 25.01 Rai which is averaged at 4.40%. (Table 4.64)

Table 4.64 Farm land owning for dairy farming

Farm land owning for dairy farming	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
(Rai)	No.	%	No.	%	No.	%	No.	%
2.00 – 6.00	10	76.90	5	55.50	9	39.10	24	53.30
6.01 – 10.00	1	7.70	3	33.30	4	17.40	8	17.80
10.01 – 15.00	1	7.70	1	11.20	2	8.70	4	8.90
15.01 – 20.00	1	7.70	-	-	4	17.40	5	11.10
20.01 – 25.00	-	-	-	-	3	13.00	3	6.70
equivalent to or more than 25.10	-	-	-	-	1	4.40	1	2.20
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum 18.00 Rai	Maximum 15.50 Rai	Maximum 30.00 Rai	Maximum 30.00 Rai
Minimum 2.00 Rai	Minimum 2.00 Rai	Minimum 2.00 Rai	Minimum 2.00 Rai
Mean 5.90 Rai	Mean 6.44 Rai	Mean 11.80 Rai	Mean 9.03 Rai
S.D. 4.641	S.D. 4.268	S.D. 8.411	S.D. 7.269

23. Size of area for pasture

Large dairy cooperative: It was found that the farmer samples have area for pasture maximum at 11.00 Rai and minimum at 0.00 Rai with an average at 3.27 Rai. The most of farmer samples have area for pasture between 0.01 - 5.00 Rai which is averaged at 69.20%, and the secondary, the farmer samples do not have pasture which is averaged at 15.40%. There are only few farmer samples have area for pasture is between 5.01 – 10.00 Rai and between 10.01 - 15.00 Rai which is averaged at 7.70%. (Table 4.65)

Medium dairy cooperative: It was found that the farmer samples have area for pasture maximum at 15.00 Rai and minimum at 0.00 Rai with an average at 3.61 Rai. The most of farmer samples have area for pasture between 0.01 - 5.00 Rai which is averaged at 55.60%, and the secondary, the farmer samples do not have pasture which is averaged at 22.20%. There are only few farmer samples have area for pasture is between 5.01 – 10.00 Rai and between 10.01 - 15.00 Rai which is averaged at 11.10%. (Table 4.65)

Small dairy cooperative: It was found that the farmer samples have area for pasture maximum at 25.00 Rai and minimum at 0.00 Rai with an average at

6.39 Rai. The most of farmer samples have area for pasture between 0.01 - 5.00 Rai which is averaged at 52.20%, and the secondary, the farmer samples have area for pasture is between 5.01 – 10.00 Rai which is averaged at 30.50%.. There are only few farmer samples do not have pasture and area for pasture is equivalent to or more than 20.01 Rai which is averaged at 4.30%. (Table 4.65)

Table 4.65 Size of area for pasture

Size of area for pasture (rai)	LDC (n = 13)		MDC (n = 9)		SDC (n = 23)		Total (N = 45)	
	No.	%	No.	%	No.	%	No.	%
Do not have pasture	2	15.40	2	22.20	1	4.30	5	11.10
0.01 – 5.00	9	69.20	5	55.60	12	52.20	26	57.80
5.01 – 10.00	1	7.70	1	11.10	7	30.50	9	20.00
10.01 – 15.00	1	7.70	1	11.10	-	-	2	4.40
15.01 – 20.00	-	-	-	-	2	8.70	2	4.40
equivalent to or more than 20.01	-	-	-	-	1	4.30	1	2.30
Total	13	100.00	9	100.00	23	100.00	45	100.00

LDC	MDC	SDC	Total
Maximum11.00Rai	Maximum15.00Rai	Maximum25.00Rai	Maximum25.00Rai
Minimum 0.00 Rai	Minimum 0.00 Rai	Minimum 0.00 Rai	Minimum 0.00 Rai
Mean 3.27 Rai	Mean 3.61 Rai	Mean 6.39 Rai	Mean 4.93 Rai
S.D. 3.345	S.D. 5.267	S.D. 6.034	S.D. 5.347

24. Cognizance in operating of dairy cooperative

Large dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in member of cooperative have right to participate in operation planning of cooperative and members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is cooperative would support member to help each other in which they chose the correct answer 84.60%. The less cognizance issue is dairy cooperative share profit to member up to their share quantity only example high share receive high dividend that they chose the wrong answer 100.00%. (Table 4.66)

In addition, it also found that the farmer samples have cognizance in operating of dairy cooperative averaged at 4.54 score which is in a medium level (3.34 – 6.67 scores). The most of farmer sample has medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 61.50%. The secondary group who has low level of cognizance in operating of Dairy Cooperative (less than 3.34 scores) is averaged at 30.80%. And the minority group who has high level of cognizance in operating of dairy cooperative (more than 6.67 scores) is averaged at 7.70%. In this research, it also discovered that the farmer samples of large dairy cooperative gained lowest cognizance in operating of dairy cooperative at 3 scores and the highest at 7 scores

Medium dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in member of cooperative have right to participate in operation planning of cooperative, members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative and cooperative would support member to help each other. It can be evidenced by the questionnaire that they chose the correct answer 88.90%. The secondary issue is dairy cooperative pay attention in member accretion than capital increment in which they chose the correct answer 77.80%. The less cognizance issue is management of cooperative originate from decision of executive, committee and cooperative officer only, dairy cooperative share profit to member up to their share quantity only example high share receive high dividend, achievement of cooperative depend on capital of cooperative and price of share are variable and depend economical condition that they chose the wrong answer 100.00%.(Table 4.66)

In addition, it also found that the farmer samples have cognizance in operating of Dairy Cooperative averaged at 3.66 score which is in a medium level (3.34 – 6.67 scores). The most of farmer sample has medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 66.70%. The secondary group who has low level of cognizance in operating of dairy cooperative (less than 3.34 scores) is averaged at 33.30%. In this research, it also discovered that the farmer samples of medium dairy cooperative gained lowest cognizance in operating of dairy cooperative at 3 scores and the highest at 4 scores.

Small dairy cooperative: It was found that the most of farmer samples have cognizance in operating of dairy cooperative in member of cooperative have right to participate in operation planning of cooperative and members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative. It can be evidenced by the questionnaire that they chose the correct answer 100.00%. The secondary issue is cooperative would support member to help each other in which they chose the correct answer 91.40%. The less cognizance issue is management of cooperative originate from decision of executive, committee and cooperative officer only and dairy cooperative share profit to member up to their share quantity only example high share receive high dividend that they chose the wrong answer 91.30%. (Table 4.66)

In addition, it also found that the farmer samples have cognizance in operating of dairy cooperative averaged at 4.52 score which is in a medium level (3.34 – 6.67 scores). The most of farmer sample has medium level of cognizance in operating of dairy cooperative (3.34 – 6.67 scores) averaged at 78.30%. The secondary group who has low level of cognizance in operating of dairy cooperative (less than 3.34 scores) is averaged at 17.40%. And the minority group who has high level of cognizance in operating of dairy cooperative (more than 6.67 scores) is averaged at 4.30%. In this research, it also discovered that the farmer samples of small dairy cooperative gained lowest cognizance in operating of dairy cooperative at 3 scores and the highest at 7 scores.

Table 4.66 Cognizance in operating of dairy cooperative

Cognizance in operating of dairy cooperative	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Objective of cooperative are transaction as much as possible	5	38.50	8	61.50	1	11.10	8	88.90	9	39.10	14	60.90
2. Dairy Cooperative pay attention in member accretion than capital increment	10	76.90	3	23.10	7	77.80	2	22.20	14	60.90	9	39.10
3. Member of cooperative have right to participate in operation planning of cooperative	13	100.00	-	-	8	88.90	1	11.10	23	100.00	-	-
4. Management of cooperative originate from decision of executive, committee and cooperative officer only	3	23.10	10	76.90	-	-	9	100.00	2	8.70	21	91.30
5. Dairy farming cooperative share profit to member up to their share quantity only example high share receive high dividend	-	-	13	100.00	-	-	9	100.00	2	8.70	21	91.30

Table 4.66 Cognizance in operating of dairy cooperative (continue)

Cognizance in operating of dairy cooperative	LDC (n = 13)				LDC (n = 9)				LDC (n = 23)			
	Truth		False		Truth		False		Truth		False	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6. Members must have a sense of ownership in dairy cooperative therefore contribute to a successful cooperative	13	100.00	-	-	8	88.90	1	11.10	23	100.00	-	-
7. Achievement of cooperative depend on capital of cooperative	2	15.40	11	84.60	-	-	9	100.00	4	17.40	19	82.60
8. Price of share are variable and depend economical condition	5	38.50	8	61.50	-	-	9	100.00	8	34.80	15	65.20
9. Member have to trust in cooperative management of the committee therefore operate of cooperative will smooth	2	15.40	11	84.60	1	11.10	8	88.90	6	26.10	17	73.90
10. Cooperative would support member to help each other	11	84.60	2	15.40	8	88.90	1	11.10	21	91.40	2	8.70

Remark Divide level of dairy farmers' cognizance in operating of Dairy Cooperative in Upper Northern Thailand total 3 levels including

Cognizance in operating of Dairy Cooperative in low level. (0.00 – 3.33 score)
Cognizance in operating of Dairy Cooperative in medium level. (3.34 – 6.67 score)
Cognizance in operating of Dairy Cooperative in high level.(6.68- 10.00 score)

Summarize the score of cognizance in operating of Dairy Cooperative	LDC		MDC		SDC	
	No.	%	No.	%	No.	%
Score of cognizance (Total 24 score)						
Cognizance in low level. (0.00 – 3.33 score)	4	30.80	3	33.30	4	17.40
Cognizance in medium level. (3.34 – 6.67 score)	8	61.50	6	66.70	18	78.30
Cognizance in high level. (6.68- 10.00 score)	1	7.70	-	-	1	4.30
Total	13	100.00	9	100.00	23	100.00

	LDC	MDC	SDC
Score Maximum	7	4	7
Score Minimum	3	3	3
Score Mean	4.54	3.66	4.52
Standard Deviation	1.391	0.500	1.122

25. Satisfaction to dairy cooperative operation

Large dairy cooperative

It was found that satisfaction to dairy cooperative operation in high level towards working of cooperative officer ($\overline{X}$ = 3.15), standard in raw milk purchase from member ($\overline{X}$ = 3.15), decentralize in duty and responsibility of each division ($\overline{X}$ = 3.08), rule and regulation of cooperative ($\overline{X}$ = 3.08), dairy cooperative management structure ($\overline{X}$ = 2.92), coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 2.85), transparency management of executive, committees and officers ($\overline{X}$ = 2.54) and finance controlling and Inspecting system ($\overline{X}$ = 2.54) respectively. (Table 4.67)

Satisfaction to dairy cooperative operation in low level towards policy and work plan in cooperative management ($\overline{X}$ = 2.31), unity in member group ($\overline{X}$ = 2.31), administration of the executive/committee ($\overline{X}$ = 2.23), reporting of overall operation to member ($\overline{X}$ = 2.00) and satisfaction in administration of Dairy Cooperative ($\overline{X}$ = 2.00) respectively. (Table 4.67)

Satisfaction to dairy cooperative operation in lowest level towards participation in cooperative management planning ($\overline{X}$ = 1.69) and offer an

opportunity to member to participate in every administration procedure ($\overline{X}$ = 1.69) respectively. (Table 4.67)

As a whole, the farmer samples of large dairy cooperative have satisfaction to dairy cooperative operation in low level ($\overline{X}$ = 2.50)

Medium dairy cooperative

It was found that satisfaction to dairy cooperative operation in high level towards coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 2.78), decentralize in duty and responsibility of each division ($\overline{X}$ = 2.67), working of cooperative officer ($\overline{X}$ = 2.67), rule and regulation of cooperative ($\overline{X}$ = 2.67) and unity in member group ($\overline{X}$ = 2.67) respectively. (Table 4.67)

Satisfaction to dairy cooperative operation in low level towards policy and work plan in cooperative management ($\overline{X}$ = 2.33), dairy cooperative management structure ($\overline{X}$ = 2.33), administration of the executive /committee ($\overline{X}$ = 2.22), standard in raw milk purchase from member ($\overline{X}$ = 2.22), finance controlling and inspecting system ($\overline{X}$ = 1.89), satisfaction in administration of dairy cooperative ($\overline{X}$ = 1.89), participation in cooperative management planning ($\overline{X}$ = 1.78) and reporting of overall operation to member ($\overline{X}$ = 1.78) respectively. (Table 4.67)

Satisfaction to dairy cooperative operation in lowest level towards transparency management of executive, committees and officers ($\overline{X}$ = 1.67) and offer an opportunity to member to participate in every administration procedure ($\overline{X}$ = 1.33) respectively. (Table 4.67)

As a whole, the farmer samples of medium dairy cooperative have satisfaction to dairy cooperative operation in low level ($\overline{X}$ = 2.19)

Small dairy cooperative

It was found that satisfaction to dairy cooperative operation in high level towards unity in member group ($\overline{X}$ = 3.22), administration of the executive/committee ($\overline{X}$ = 2.70), standard in raw milk purchase from member ($\overline{X}$ = 2.65), Rule and regulation of cooperative ($\overline{X}$ = 2.61), transparency management

of executive, committees and officers ($\overline{X}$ = 2.57) and working of cooperative officer ($\overline{X}$ = 2.52) respectively. (Table 4.67)

Satisfaction to dairy cooperative operation in low level towards satisfaction in administration of dairy cooperative ($\overline{X}$ = 2.43), policy and work plan in cooperative management ($\overline{X}$ = 2.30), finance controlling and inspecting system ($\overline{X}$ = 2.26), decentralize in duty and responsibility of each division ($\overline{X}$ = 2.22), offer an opportunity to member to participate in every administration procedure ($\overline{X}$ = 2.22), participation in cooperative management planning ($\overline{X}$ = 2.17), coordination between cooperative, milk factories, academy and government officer in dairy farming ($\overline{X}$ = 2.13), Dairy Cooperative management structure ($\overline{X}$ = 2.09) and reporting of overall operation to member ($\overline{X}$ = 2.09) respectively. (Table 4.67)

As a whole, the farmer samples of small dairy cooperative have satisfaction to dairy cooperative operation in low level ($\overline{X}$ = 2.41).

Table 4.67 Satisfaction to dairy cooperative operation

Satisfaction to dairy cooperative operation	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Policy and work plan in cooperative management	2.31	0.630	Low	2.33	0.500	Low	2.30	0.559	Low
2. Participation in cooperative management planning	1.69	0.630	Lowest	1.78	0.667	Low	2.17	0.834	Low
3. Dairy cooperative management structure	2.92	0.494	High	2.33	0.500	Low	2.09	0.733	Low
4. Decentralize in duty and responsibility of each division	3.08	0.494	High	2.67	0.500	High	2.22	0.736	Low
5. Administration of the executive/committee	2.23	0.439	Low	2.22	0.833	Low	2.70	0.559	High
6. Working of cooperative officer	3.15	0.376	High	2.67	0.500	High	2.52	0.730	High
7. Rule and regulation of cooperative	3.08	0.494	High	2.67	0.500	High	2.61	0.722	High
8. Standard in raw milk purchase from member	3.15	0.376	High	2.22	0.667	Low	2.65	0.885	High
9. Coordination between cooperative, milk factories, academy and government officer in dairy farming	2.85	0.555	High	2.78	0.441	High	2.13	0.626	Low
10. Unity in member group	2.31	0.630	Low	2.67	0.707	High	3.22	0.736	High
11. Reporting of overall operation to member	2.00	0.577	Low	1.78	0.833	Low	2.09	0.793	Low

Table 4.67 Satisfaction to dairy cooperative operation (continue)

Satisfaction to Dairy Cooperative operation	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
12. Transparency management of executive, committees and officers	2.54	0.660	High	1.67	0.866	Lowest	2.57	0.728	High
13. Finance controlling and inspecting system	2.54	0.776	High	1.89	0.782	Low	2.26	0.619	Low
14. Offer an opportunity to member to participate in every administration procedure	1.69	0.855	Lowest	1.33	0.500	Lowest	2.22	0.902	Low
15. Your satisfaction in administration of dairy cooperative	2.00	0.577	Low	1.89	0.601	Low	2.43	0.590	Low
Total	**2.50**	**0.346**	**Low**	**2.19**	**0.299**	**Low**	**2.41**	**0.334**	**Low**

Remark Divide level of dairy farmers' satisfaction with dairy cooperative operation in upper northern Thailand total 4 levels including

Satisfaction with dairy cooperative operation in lowest level. (1.00 – 1.75 score)

Satisfaction with dairy cooperative operation in low level. (1.76 – 2.51 score)

Satisfaction with dairy cooperative operation in high level. (2.52 – 3.27 score)

Satisfaction with dairy cooperative operation in the highest level. (3.28 – 4.00 score)

26. Satisfaction in operation of government officer concerning dairy farming

Large dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in high level towards human relation ($\overline{X}$ = 3.23), Artificial Insemination service ($\overline{X}$ = 3.15), suitability of equipment ($\overline{X}$ = 3.15), knowledge transmission of officer ($\overline{X}$ = 3.08), responsibility to duty and on time ($\overline{X}$ = 3.08), suitability of communication opportunity ($\overline{X}$ = 3.00), animal treatment service ($\overline{X}$ = 2.92), counseling service ($\overline{X}$ = 2.92), deliver service in hard case ($\overline{X}$ = 2.92), suitability of service charge ($\overline{X}$ = 2.92), annually blood sampling ($\overline{X}$ = 2.77), suitability of officer number with animal number ($\overline{X}$ = 2.77) and vaccination service ($\overline{X}$ = 2.69) respectively. (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in low level towards autopsy service ($\overline{X}$ = 2.15) (Table 74)

As a whole, the farmer samples of large dairy cooperative have satisfaction in operation of government officer concerning dairy farming in high level ($\overline{X}$ = 2.91)

Medium dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in highest level towards vaccination service ($\overline{X}$ = 3.33) and annually blood sampling ($\overline{X}$ = 3.33) (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in high level towards artificial insemination service ($\overline{X}$ = 3.22), animal treatment service ($\overline{X}$ = 3.11), suitability of service charge ($\overline{X}$ = 3.00), suitability of communication opportunity ($\overline{X}$ = 3.00), human relation ($\overline{X}$ = 3.00), responsibility to duty and on time ($\overline{X}$ = 2.89), suitability of officer number with animal number ($\overline{X}$ = 2.67), suitability of equipment ($\overline{X}$ = 2.67) and counseling service ($\overline{X}$ = 2.56) respectively. (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in low level towards knowledge transmission of officer ($\overline{X}$ = 2.22) and deliver service in hard case ($\overline{X}$ = 1.89) respectively. (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in lowest level towards autopsy service ($\overline{X}$ = 1.11) (Table 74)

As a whole, the farmer samples of medium dairy cooperative have satisfaction in operation of government officer concerning dairy farming in high level ($\overline{X}$ = 2.69).

Small dairy cooperative

It was found that satisfaction in operation of government officer concerning dairy farming in high level towards vaccination service ($\overline{X}$ = 3.17), suitability of communication opportunity ($\overline{X}$ = 3.09), annually blood sampling ($\overline{X}$ = 3.00), artificial insemination service ($\overline{X}$ = 2.91), suitability of service charge ($\overline{X}$ = 2.83), human relation ($\overline{X}$ = 2.74) and suitability of equipment ($\overline{X}$ = 2.52) respectively. (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in low level towards responsibility to duty and on time ($\overline{X}$ = 2.39), knowledge transmission of officer ($\overline{X}$ = 2.00), animal treatment service ($\overline{X}$ = 1.96), suitability of officer number with animal number ($\overline{X}$ = 1.91) and counseling service ($\overline{X}$ = 1.87) respectively. (Table 4.68)

Satisfaction in operation of government officer concerning dairy farming in lowest level towards deliver service in hard case ($\overline{X}$ = 1.22) and autopsy service ($\overline{X}$ = 1.13) respectively. (Table 4.68)

As a whole, the farmer samples of small dairy cooperative have satisfaction in operation of government officer concerning dairy farming in low level ($\overline{X}$ = 2.30).

Table 4.68 Satisfaction in operation of government officer concerning dairy farming

Satisfaction in operation of government officer concerning dairy farming	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Artificial insemination service	3.15	0.376	High	3.22	0.667	High	2.91	0.848	High
2. Animal treatment service	2.92	0.641	High	3.11	0.601	High	1.96	0.928	Low
3. Vaccination service	2.69	0.751	High	3.33	0.500	Highest	3.17	1.114	High
4. Annually Blood sampling	2.77	0.832	High	3.33	0.707	Highest	3.00	1.128	High
5. Counseling service	2.92	0.641	High	2.56	0.527	High	1.87	0.869	Low
6. deliver service in hard case	2.92	0.641	High	1.89	0.601	Low	1.22	0.518	Lowest
7. Autopsy service	2.15	0.801	Low	1.11	0.333	Lowest	1.13	0.458	Lowest
8. Suitability of service charge	2.92	0.494	High	3.00	0.500	High	2.83	0.717	High
9. Suitability of communication opportunity	3.00	0.577	High	3.00	0.000	High	3.09	1.041	High
10. Suitability of officer number with animal number	2.77	0.725	High	2.67	0.707	High	1.91	0.848	Low
11. Suitability of equipment	3.15	0.376	High	2.67	0.500	High	2.52	0.593	High
12. Knowledge Transmission of officer	3.08	0.494	High	2.22	0.441	Low	2.00	0.905	Low
13. Responsibility to duty and on time	3.08	0.494	High	2.89	0.333	High	2.39	1.033	Low
14. Human relation	3.23	0.439	High	3.00	0.000	High	2.74	0.915	High
Total	**2.91**	**0.408**	**High**	**2.69**	**0.224**	**High**	**2.30**	**0.543**	**Low**

Remark Divide level of dairy farmers' satisfaction in operation of government officer concerning dairy farming in upper northern Thailand total 4 levels including

Satisfaction in operation of government officer concerning dairy farming in lowest level. (1.00 – 1.75 score)

Satisfaction in operation of government officer concerning dairy farming in low level. (1.76 – 2.51 score)

Satisfaction in operation of government officer concerning dairy farming in high level. (2.52 – 3.27 score)

Satisfaction in operation of government officer concerning dairy farming in the highest level.(3.28 – 4.00 score)

27. Satisfaction in earn a living by dairy farming

Large dairy cooperative

It was found that satisfaction in earn a living by dairy farming in high level towards time to spend with family ($\overline{X}$ = 3.23), dairy breed deploy in past ($\overline{X}$ = 2.92), dignity and respect from community ($\overline{X}$ = 2.85) and security in dairy farming occupation ($\overline{X}$ = 2.54) respectively. (Table 4.69)

Satisfaction in earn a living by dairy farming in low level towards happy in dairy farming occupation ($\overline{X}$ = 2.31) and government policy to support dairy farmer ($\overline{X}$ = 2.23) respectively. (Table 4.69)

Satisfaction in earn a living by dairy farming in lowest level towards milk consumption rate in country (11.5 L/person/year) ($\overline{X}$ = 1.69) and opening the Free Trade Area (FTA)($\overline{X}$ = 1.69), milk production cost in past ($\overline{X}$ = 1.62) and Return from raw milk selling ($\overline{X}$ = 1.62) respectively. (Table 4.69)

As a whole, the farmer samples of large dairy cooperative have satisfaction in earn a living by dairy farming in low level ($\overline{X}$ = 2.27)

Medium dairy cooperative

It was found that satisfaction in earn a living by dairy farming in low level towards dairy breed deploy in past ($\overline{X}$ = 2.44), dignity and respect from community ($\overline{X}$ = 2.33), time to spend with family ($\overline{X}$ = 2.22) and happy in dairy farming occupation ($\overline{X}$ = 1.89) respectively. (Table 4.69)

Satisfaction in earn a living by dairy farming in lowest level towards milk production cost in past ($\overline{X}$ = 1.67), return from raw milk selling ($\overline{X}$ = 1.56), security in dairy farming occupation ($\overline{X}$ = 1.56), government policy to support dairy farmer ($\overline{X}$ = 1.44), opening the Free Trade Area (FTA) ($\overline{X}$ = 1.33) and milk consumption rate in country (11.5 L/person/year) ($\overline{X}$ = 1.22) respectively. (Table 4.69)

As a whole, the farmer samples of medium dairy cooperative have satisfaction in earn a living by dairy farming in low level ($\overline{X}$ = 1.77).

Small dairy cooperative

It was found that satisfaction in earn a living by dairy farming in high level towards time to spend with family ($\overline{X}$ = 3.26) and dairy breed deploy in past ($\overline{X}$ = 2.56) respectively. (Table 4.69)

Satisfaction in earn a living by dairy farming in low level towards happy in dairy farming occupation ($\overline{X}$ = 2.30), security in dairy farming occupation ($\overline{X}$ = 2.04) and dignity and respect from community ($\overline{X}$ = 1.91) respectively. (Table 4.69)

Satisfaction in earn a living by dairy farming in lowest level towards return from raw milk selling ($\overline{X}$ = 1.52), government policy to support dairy farmer ($\overline{X}$ = 1.26), milk production cost in past ($\overline{X}$ = 1.22), milk consumption rate in country (11.5 L/person/year) ($\overline{X}$ = 1.09) and opening the Free Trade Area (FTA) ($\overline{X}$ = 1.09) respectively. (Table 4.69)

As a whole, the farmer samples of small dairy cooperative have satisfaction in earn a living by dairy farming in low level ($\overline{X}$ = 1.82).

Table 4.69 Satisfaction in earn a living by dairy farming

Satisfaction in earn a living by dairy farming	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction	($\overline{X}$)	S.D.	Level of satisfaction
1. Dairy breed deploy in present	2.92	0.494	High	2.44	0.726	Low	2.52	0.665	High
2. Milk production cost in present	1.62	0.506	Lowest	1.67	1.000	Lowest	1.22	0.422	Lowest
3. Return from raw milk selling	1.62	0.506	Lowest	1.56	0.527	Lowest	1.52	0.511	Lowest
4. Security in dairy farming occupation	2.54	0.660	High	1.56	0.726	Lowest	2.04	0.878	Low
5. Time to spend with family	3.23	0.439	High	2.22	0.441	Low	3.26	0.752	High
6. Dignity and respect from community	2.85	0.899	High	2.33	0.500	Low	1.91	0.733	Low
7. Government Policy to support dairy farmer	2.23	0.927	Low	1.44	0.726	Lowest	1.26	0.449	Lowest
8. Milk Consumption rate in country (11.5 L/person/year)	1.69	0.630	Lowest	1.22	0.441	Lowest	1.09	0.288	Lowest
9. Opening the Free Trade Area (FTA)	1.69	0.480	Lowest	1.33	0.500	Lowest	1.09	0.288	Lowest
10. You are happy in dairy farming occupation	2.31	0.855	Low	1.89	0.601	Low	2.30	0.876	Low
Total	**2.27**	**0.352**	**Low**	**1.77**	**0.308**	**Low**	**1.82**	**0.361**	**Low**

Remark Divide level of dairy farmers' satisfaction in earn a living by dairy farming in upper northern Thailand total 4 levels including

Satisfaction in earn a living by dairy farming in lowest level. (1.00 – 1.75 score)

Satisfaction in earn a living by dairy farming in low level. (1.76 – 2.51 score)

Satisfaction in earn a living by dairy farming in high level. (2.52 – 3.27 score)

Satisfaction in earn a living by dairy farming in the highest level.(3.28 – 4.00 score)

28. Problem and obstacle in dairy farming (physical aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of unsuitable climate and insufficient area for dairy farming which is averaged at 100.00%. The secondary, a problem and obstacle are topography not suitable to dairy farming such as tidal flat ,bank etc. and insufficient water source which is averaged at 76.90%. There are only few farmer samples who have a problem and obstacle of inconvenient transportation and far from milk collecting center of cooperative which is averaged at 7.70%. (Table 4.70)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of unsuitable climate, insufficient area for dairy farming and insufficient water source which is averaged at 100.00% .The secondary, a problem and obstacle is topography not suitable to dairy farming such as tidal flat ,bank etc which is averaged at 88.90% . There are only few farmer samples who have a problem and obstacle of inconvenient transportation and far from milk collecting center of cooperative which is averaged at 44.40%. (Table 4.70)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of insufficient area for dairy farming and insufficient water source which is averaged at 100.00% . The secondary, a problem and obstacle is unsuitable climate which is averaged at 95.70% . There are only few farmer sample who have a problem and obstacle of far from milk collecting center of cooperative which is averaged at 30.40%. (Table 4.70)

29. Problem and obstacle in dairy farming (economic aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of insufficient income from farming and lack of capital supporting from government which is averaged at 100.00% . The secondary, a problem and obstacle are expensive land, they couldn't expand the farm and debt which is averaged at 92.30%. There are only few farmer samples who have a problem and obstacle of high tax of Sub-District Administration Organization which is averaged at 7.70%. (Table 4.70)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive land, they couldn't expand

farm, lack of labour, insufficient income from dairy farming, dept and lack of capital supporting from government which is averaged at 100.00%. There are only few farmer samples who have a problem and obstacle of high tax of Sub - District Administration Organization which is averaged at 11.10%. (Table 4.70)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of expensive land, they couldn't expand farm, lack of labour, insufficient income from dairy farming and dept which is averaged at 100.00% . The secondary, a problem and obstacle is lack of capital supporting from government which is averaged at 95.70%. There are only few farmer samples who have a problem and obstacle of high tax of Sub - District Administration Organization which is averaged at 8.70%. (Table 4.70)

30. Problem and obstacle in dairy farming (social aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of information in dairy farming and lack of contact with government officer which is averaged at 100.00% . The secondary a problem and obstacle are community not admit dairy farming (pollution from waste water, feces) and lack of dairy farming training which is averaged at 92.30%. There are only few farmer samples who have a problem and obstacle of rule regulation of municipality which is averaged at 30.80.70%. (Table 4.70)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of contact with cooperative officer and lack of contact with government officer which is averaged at 100.00% . The secondary a problem and obstacle are community not admit dairy farming (pollution from waste water, feces) , lack of information in dairy farming and lack of dairy farming training which is averaged at 88.90%. There are only few farmer samples who have a problem and obstacle is rule regulation of municipality which is averaged at 66.70%. (Table 4.70)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of information in dairy farming, lack of contact with government officer and lack of dairy farming training which is averaged at 100.00%. The secondary a problem and obstacle is lack of contact with cooperative

officer which is averaged at 91.30%. There are only few farmer samples who have a problem and obstacle is rule regulation of municipality which is averaged at 13.00%. (Table 4.70)

31. Problem and obstacle in dairy farming (farm operating aspect)

Large dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of pasture, low milk production, price of a raw milk were low, expensive concentrate feed and expensive fuel which is averaged at 100.00%. The secondary a problem and obstacle is animal had low fertilization rate which is averaged at 84.60%. There are only few farmer samples who have a problem and obstacle is less experience in dairy farming which is averaged at 30.80%. (Table 4.70)

Medium dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of pasture, low milk production, animal got chronic disease, animal had low fertilization, price of a raw milk were low expensive concentrate feed, expensive fuel and lack of modern equipment which is averaged at 100.00%. There are only few farmer samples who have a problem and obstacle of less experience in dairy farming which is averaged at 88.90%. (Table 4.70)

Small dairy cooperative: It was found that the most of farmer samples have a problem and obstacle of lack of pasture, low milk production, expensive concentrate feed, animal had low fertilization, price of a raw milk were low expensive concentrate feed, expensive fuel and less experience in dairy farming which is averaged at 100.00%. The secondary a problem and obstacle is lack of modern equipment which is averaged at 95.70%. There are only few farmer samples have a problem and obstacle of animal got chronic disease which is averaged at 82.60%. (Table 4.70)

Table 4.70 Problem and obstacle in dairy farming

Problem and obstacle	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Has problem		Non - problem		Has problem		Non - problem		Has problem		Non - problem	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Physical aspect												
1. Topography not suitable to dairy farming such as tidal flat ,bank etc.	10	76.90	3	23.10	8	88.90	1	11.10	15	65.20	8	34.80
2. Unsuitable climate	13	100.00	-	-	9	100.00	-	-	22	95.70	1	4.30
3. Insufficient area	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
4. Insufficient water source	10	76.90	3	23.10	9	100.00	-	-	23	100.00	-	-
5. Bad public utility	4	30.80	9	69.20	6	66.70	3	33.30	8	34.80	15	65.20
6. Inconvenient transportation	1	7.70	12	92.30	4	44.40	5	55.60	7	30.40	16	69.40
7. Far from milk collecting center of cooperative	1	7.70	12	92.30	4	44.40	5	55.60	8	34.80	15	65.20
Economic aspect												
1. Expensive land, couldn't expand farm	12	92.30	1	7.70	9	100.00	-	-	23	100.00	-	-
2. Lack of labour	10	76.90	3	23.10	9	100.00	-	-	23	100.00	-	-
3. Income from farming were insufficient	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
4. Debt	12	92.30	1	7.70	9	100.00	-	-	23	100.00	-	-
5. Lack of capital supporting from government	13	100.00	-	-	9	100.00	-	-	22	95.70	1	4.30
6. High tax of Sub - district Administration Organization	1	7.70	12	92.30	1	11.10	8	88.90	2	8.70	21	91.30

Table 4.70 Problem and obstacle in dairy farming (continue)

Problem and obstacle	LDC (n = 13)				MDC (n = 9)				SDC (n = 23)			
	Has problem		Non - problem		Has problem		Non - problem		Has problem		Non - problem	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Social aspect												
1. Community not admit dairy farming (pollution from waste water, feces)	12	92.30	1	7.70	8	88.90	1	11.10	20	87.00	3	13.00
2. Rule regulation of municipality	4	30.80	9	69.20	6	66.70	3	33.30	3	13.00	20	87.00
3. Lack of information in dairy farming	13	100.00	-	-	8	88.90	1	11.10	23	100.00	-	-
4. Lack of contact with cooperative officer	8	61.50	5	38.50	9	100.00	-	-	21	91.30	2	8.70
5. Lack of contact with government officer	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
6. Lack of dairy farming training	12	92.30	1	7.70	8	88.90	1	11.10	23	100.00	-	-
farm operating aspect												
1. Lack of pasture	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
2. Low milk production	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
3. Animal got chronic disease	9	69.20	4	30.80	9	100.00	-	-	19	82.60	4	17.40
4. Animal had low fertilization rate	11	84.60	2	15.40	9	100.00	-	-	23	100.00	-	-
5. Price of a raw milk were low	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
6. Expensive concentrate feed	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
7. Expensive fuel	13	100.00	-	-	9	100.00	-	-	23	100.00	-	-
8. Lack of modern equipment	6	46.20	7	53.80	9	100.00	-	-	22	95.70	1	4.30
9. Less experience in dairy farming	4	30.80	9	69.20	8	88.90	1	11.10	23	100.00	-	-

The researcher divide level of dairy farmers' problems and obstacle on dairy farming in Upper Northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems in Upper Northern Thailand for find the Dairy Cooperative's management process contributing to occupation development of dairy farmers in Upper Northern Thailand in next step.

32. Level of problem and obstacle in dairy farming (physical aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in high level towards insufficient area for dairy farming ($\overline{X}$ = 4.23) (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in medium level towards topography not suitable to dairy farming such as tidal flat ,bank etc. ($\overline{X}$ = 3.10), unsuitable climate ($\overline{X}$ = 2.92) and insufficient water source ($\overline{X}$ = 2.90) respectively. (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in low level towards inconvenient transportation ($\overline{X}$ = 2.00) (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in lowest level towards bad public utility such as electric system, water supply system ($\overline{X}$ = 1.75) and far from milk collecting center of cooperative ($\overline{X}$ = 1.00) respectively. (Table 4.71)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in high level towards insufficient area for dairy farming ($\overline{X}$ = 4.67) and insufficient water source ($\overline{X}$ = 3.44) respectively. (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in medium level towards topography not suitable to dairy farming such as tidal flat ,bank etc. ($\overline{X}$ = 3.25) and unsuitable climate ($\overline{X}$ = 3.11) respectively. (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in low level towards bad public utility such as electric system, water supply system ($\overline{X}$ = 2.50) and far from milk collecting center of cooperative ($\overline{X}$ = 2.00) respectively. (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in lowest level towards inconvenient transportation ($\overline{X}$ = 1.75) (Table 4.71)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (physical aspect) in highest level towards insufficient area for dairy farming ($\overline{X}$ = 4.57) (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in medium level towards insufficient water source ($\overline{X}$ = 2.70) and unsuitable climate ($\overline{X}$ = 2.64) respectively. (Table 4.71)

Problem and obstacle in dairy farming (physical aspect) in low level towards topography not suitable to dairy farming such as tidal flat ,bank etc. ($\overline{X}$ = 2.40), far from milk collecting center of cooperative ($\overline{X}$ = 2.38), bad public utility such as electric system, water supply system ($\overline{X}$ = 1.88) and inconvenient transportation ($\overline{X}$ = 1.86) respectively. (Table 4.71)

Table 4.71 Level of problem and obstacle in dairy farming (physical aspect)

Level of problem and obstacle in dairy farming (physical aspect)	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Topography not suitable to dairy farming such as tidal flat ,bank etc.	3.10	0.876	Medium	3.25	1.035	Medium	2.40	0.828	Low
2. Unsuitable climate	2.92	0.862	Medium	3.11	0.928	Medium	2.64	0.902	Medium
3. Insufficient area for dairy farming	4.23	1.166	High	4.67	1.000	High	4.57	0.590	Highest
4. Insufficient water source	2.90	1.287	Medium	3.44	0.882	High	2.70	0.822	Medium
5. Bad public utility	1.75	0.957	Lowest	2.50	0.548	Low	1.88	1.356	Low
6. Inconvenient transportation	2.00	0.000	Low	1.75	0.500	Lowest	1.86	1.464	Low
7. Far from milk collecting center of cooperative	1.00	0.000	Lowest	2.00	0.817	Low	2.38	1.685	Low

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

33. Level of problem and obstacle in dairy farming (economic aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in highest level towards expensive land, couldn't expand farm ($\overline{X}$ = 4.42) and income from farming were insufficient ($\overline{X}$ = 4.31) respectively. (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in high level towards lack of capital supporting from government ($\overline{X}$ = 4.08) and lack of labour ($\overline{X}$ = 3.50) respectively.(Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in medium level towards debt ($\overline{X}$ = 3.42). (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in low level towards high tax of Sub district Administration Organization ($\overline{X}$ = 2.00) (Table 4.72)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in highest level towards expensive land, couldn't expand farm ($\overline{X}$ = 4.33) (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in high level towards income from farming were insufficient ($\overline{X}$ = 4.11), lack of capital supporting from government ($\overline{X}$ = 3.89) and debt ($\overline{X}$ = 3.67) respectively. (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in medium level towards lack of labour ($\overline{X}$ = 3.11) (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in low level towards high tax of Sub district Administration Organization ($\overline{X}$ = 1.00) (Table 4.72)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (economic aspect) in highest level towards income from farming were insufficient

($\overline{X}$ = 4.91), lack of capital supporting from government ($\overline{X}$ = 4.82), expensive land, couldn't expand farm ($\overline{X}$ = 4.52) and debt ($\overline{X}$ = 4.26) respectively.(Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in high level towards lack of labour ($\overline{X}$ = 3.00) (Table 4.72)

Problem and obstacle in dairy farming (economic aspect) in low level towards high tax of Sub district Administration Organization ($\overline{X}$ = 2.00) (Table 4.72)

Table 4.72 Level of problem and obstacle in dairy farming (economic aspect)

Level of problem and obstacle in dairy farming (economic aspect)	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Expensive land, couldn't expand farm	4.42	0.515	Highest	4.33	0.707	Highest	4.52	0.511	Highest
2. Lack of labour	3.50	0.527	High	3.11	0.928	Medium	3.43	1.037	High
3. Income from farming were insufficient	4.31	0.630	Highest	4.11	0.782	High	4.91	0.288	Highest
4. Debt	3.42	0.515	Medium	3.67	1.118	High	4.26	0.541	Highest
5. Lack of capital supporting from government	4.08	0.862	High	3.89	0.928	High	4.82	0.395	Highest
6. High tax of Sub district Administration Organization	2.00	0.000	Low	1.00	0.000	Lowest	2.00	1.414	Low

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

34. Level of problem and obstacle in dairy farming (social aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (social aspect) in highest level towards lack of information in dairy farming ($\overline{X}$ = 4.38) (Table 4.73)

Problem and obstacle in dairy farming (social aspect) in high level towards lack of contact with government officer ($\overline{X}$ = 4.23) and lack of dairy farming training ($\overline{X}$ = 3.67) respectively.(Table 4.73)

Problem and obstacle in dairy farming (social aspect) in medium level towards community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 3.42), rule regulation of municipality ($\overline{X}$ = 3.25) and lack of contact with cooperative officer ($\overline{X}$ = 2.88) respectively.(Table 4.73)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (social aspect) in high level towards lack of information in dairy farming ($\overline{X}$ = 4.13), lack of dairy farming training ($\overline{X}$ = 3.63) and lack of contact with government officer ($\overline{X}$ = 3.44) respectively.(Table 4.73)

Problem and obstacle in dairy farming (social aspect) in medium level towards lack of contact with cooperative officer ($\overline{X}$ = 2.67) and community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 2.63) respectively.(Table 4.73)

Problem and obstacle in dairy farming (social aspect) in low level towards rule regulation of municipality ($\overline{X}$ = 2.50). (Table 4.73)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (social aspect) in highest level towards lack of dairy farming training ($\overline{X}$ = 4.87), lack of contact with government officer ($\overline{X}$ = 4.78) and lack of information in dairy farming ($\overline{X}$ = 4.65) respectively.(Table 4.73)

Problem and obstacle in dairy farming (social aspect) in high level towards lack of contact with cooperative officer ($\overline{X}$ = 3.86) (Table 4.73)

Problem and obstacle in dairy farming (social aspect) in medium level towards community not admit dairy farming (pollution from waste water, feces) ($\overline{X}$ = 2.90) (Table 4.73)

Problem and obstacle in dairy farming (social aspect) in lowest level towards rule regulation of municipality ($\overline{X}$ = 1.00) (Table 4.73)

Table 4.73 Level of problem and obstacle in dairy farming (social aspect)

Level of problem and obstacle in dairy farming (social aspect)	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Community not admit dairy farming (pollution from waste water, feces)	3.42	0.515	Medium	2.63	1.188	Medium	2.90	0.788	Medium
2. Rule regulation of municipality	3.25	1.258	Medium	2.50	1.049	Low	1.00	0.000	Lowest
3. Lack of information in dairy farming	4.38	0.650	Highest	4.13	0.641	High	4.65	0.487	Highest
4. Lack of contact with cooperative officer	2.88	1.126	Medium	2.67	0.866	Medium	3.86	0.964	High
5. Lack of contact with government officer	4.23	0.599	High	3.44	1.424	High	4.78	0.422	Highest
6. Lack of dairy farming training	3.67	0.888	High	3.63	0.916	High	4.87	0.344	Highest

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 6 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

35. Level of problem and obstacle in dairy farming (farm operating aspect)

Large dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards expensive concentrate feed ($\overline{X}$ = 4.85) and price of a raw milk were low ($\overline{X}$ = 4.62) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards expensive fuel ($\overline{X}$ = 4.00) and lack of pasture ($\overline{X}$ = 4.23) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards low milk production ($\overline{X}$ = 3.23) and animal had low fertilization rate ($\overline{X}$ = 3.09) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in low level towards lack of modern equipment ($\overline{X}$ = 2.50), animal got chronic disease ($\overline{X}$ = 2.11) and less experience in dairy farming ($\overline{X}$ = 2.00) respectively. (Table 4.74)

Medium dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards lack of pasture ($\overline{X}$ = 4.78), expensive concentrate feed ($\overline{X}$ = 4.67) and price of a raw milk were low ($\overline{X}$ = 4.44) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards low milk production ($\overline{X}$ = 4.11) and lack of modern equipment ($\overline{X}$ = 3.67) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards expensive fuel ($\overline{X}$ = 3.33), animal got chronic disease ($\overline{X}$ = 3.22), animal had low fertilization rate ($\overline{X}$ = 3.11) and less experience in dairy farming ($\overline{X}$ = 2.75) respectively. (Table 4.74)

Small dairy cooperative

It was found that level of problem and obstacle in dairy farming (farm operating aspect) in highest level towards expensive concentrate feed ($\overline{X}$ = 4.96), lack of pasture ($\overline{X}$ = 4.65) and price of a raw milk were low ($\overline{X}$ = 4.65) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in high level towards less experience in dairy farming ($\overline{X}$ = 3.91), low milk production ($\overline{X}$ = 3.70) and expensive fuel ($\overline{X}$ = 3.65) respectively. (Table 4.74)

Problem and obstacle in dairy farming (farm operating aspect) in medium level towards animal had low fertilization rate ($\overline{X}$ = 3.30), animal got chronic disease ($\overline{X}$ = 2.68) and lack of modern equipment ($\overline{X}$ = 2.68) respectively. (Table 4.74)

Table 4.74 Level of problem and obstacle in dairy farming (farm operating aspect)

Level of problem and obstacle in dairy farming (farm operating aspect)	LDC (n = 13)			MDC (n = 9)			SDC (n = 23)		
	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem	($\overline{X}$)	S.D.	Level of problem
1. Lack of pasture	3.92	0.760	High	4.78	0.441	Highest	4.65	0.487	Highest
2. Low milk production	3.23	0.599	Medium	4.11	0.928	High	3.70	1.063	High
3. Animal got chronic disease	2.11	1.054	Low	3.22	1.787	Medium	2.68	0.749	Medium
4. Animal had low fertilization rate	3.09	0.539	Medium	3.11	0.782	Medium	3.30	1.146	Medium
5. Price of a raw milk were low	4.62	0.506	Highest	4.44	0.726	Highest	4.65	0.573	Highest
6. Expensive concentrate feed	4.85	0.376	Highest	4.67	0.500	Highest	4.96	0.209	Highest
7. Expensive fuel	4.00	0.816	High	3.33	1.414	Medium	3.65	1.071	High
8. Lack of modern equipment	2.50	1.378	Low	3.67	0.707	High	2.68	0.945	Medium
9. Less experience in dairy farming	2.00	1.155	Low	2.75	0.707	Medium	3.91	0.848	High

Remark Divide level of dairy farmers' problems and obstacle on dairy farming in upper northern Thailand such as: Physical problems, Economic problems, Social problems and farm operating problems total 5 levels including

Dairy farmers' problems and obstacle in lowest level. (1.00 – 1.80 score)

Dairy farmers' problems and obstacle in low level. (1.81 – 2.61 score)

Dairy farmers' problems and obstacle in medium level. (2.62 – 3.42 score)

Dairy farmers' problems and obstacle in high level. (3.43 – 4.23 score)

Dairy farmers' problems and obstacle in the highest level. (4.24 – 5.00 score)

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand.

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
1. Personal basic factors			
1.1). Gender	Male	Male	Male
1.2). Age (average)	46.46 years	52.44 years	50.61 years
1.3). Level of education	Elementary school grade 4, Secondary school grade 3and High vocational certificate or diploma	Secondary school grade 6 or vocational certificate	Secondary school grade 3
1.4). Experience of dairy farming (average)	10.00 years	8.22 years	4.74 years
1.5). C.E. which dairy farmer decided quit dairy farming occupation.	2005 - 2006	2005 – 2006 and 2007 - 2008	2005 - 2006
1.6). Knowledge in dairy farming (Mean score / Level)	16.62 / High	16.22 / High	15.70 / Medium
1.7). Practice in Dairy farming (Mean score / Level)	1.45 / High	0.82 / Medium	0.92 / Medium
2. Economic factors			
2.1) Number of family members (average)	3.69 persons	1.89 persons	3.13 persons
2.2) Number of labours for dairy farming (average)	2.31 persons	1.78 persons	1.57 persons
2.3) Total outstanding debts (average)	185,375.00 Baht	207,142.86 Baht	286,638.89 Baht
3. Social factors			
3.1) Occupy in dairy cooperative position	Do not occupy	Do not occupy	Do not occupy
3.2) Occupy in social position	Do not occupy	Do not occupy	Do not occupy

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
3. Social factors			
3.3) Participation in various activities of Dairy Cooperative (Mean / Level)	0.99 / Medium	0.90 / Medium	0.89 / Medium
3.4) Acquire information about dairy farming from various medias (Number of farmer who received medias / Mean of time (received in 1 month))			
3.4.1) Brochure and Document	5 persons / 2.00 time	1 persons / 2.00 time	7 persons / 1.57 time
3.4.2) Newspaper	5 persons / 1.40 time	1 persons / 1.00 time	8 persons / 1.38 time
3.4.3) Livestock magazine	1 persons / 3.00 time	1 persons / 2.00 time	2 persons / 1.00 time
3.4.4) Radio	6 persons / 4.00 time	1 persons / 1.00 time	6 persons / 2.00 time
3.4.5) Television	8 persons / 1.63 time	-	14 persons / 2.21 time
3.4.6) Farmer's friend	7 persons / 6.00 time	6 persons / 4.33 time	21 persons / 5.43 time
3.4.7)Communication Board of Dairy Cooperative	12 persons / 4.00 time	8 persons / 4.38 time	23 persons / 2.83 time
3.4.8) Internet	1 persons / 1.00 time	-	4 persons / 3.00 time
3.5) Communication with officer concerning dairy farming (Number of farmer who communicated officer / Mean of time (communicated in 1 month))			
3.5.1) District Livestock Officer	8 persons / 1.25 time	1 persons / 1.00 time	4 persons / 2.25 time
3.5.2) District Artificial Insemination Officer	10 persons / 1.90 time	4 persons / 2.25 time	10 persons / 2.50 time
3.5.3) Artificial Insemination Volunteer	13 persons / 3.15 time	8 persons / 1.88 time	16 persons / 4.38 time
3.5.4) Lecturer of academy	3 persons / 1.00 time	-	-
3.5.5) Dairy Cooperative officer	11 persons / 4.00 time	9 persons / 4.00 time	16 persons / 3.19 time

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
3. Social factors			
3.5) Communication with officer concerning dairy farming (Number of farmer who communicated officer / Mean of time (communicated in 1 month))			
3.5.6) Representative from company	1 persons / 1.00 time	-	1 persons / 1.00 time
3.5.7) Other government officer	-	-	-
4. Farm operating factors			
4.1) Style of dairy farming	Tying style	Tying style	Tying style
4.2) Number of dairy replacement (calf, growing cattle, heifer) (average)	12.92 dairies	4.78 dairies	8.09 dairies
4.3) Number of dairy (milking dairy and dry dairy) (average)	18.31 dairies	10.89 dairies	12.17 dairies
4.4) Capability on milk production of dairy (average)	10.62 kg./dairy/day	9.22 kg./dairy/day	9.60 kg./dairy/day
4.5) Purchase price of raw milk (average)	9.73 Baht / kg.	9.61 Baht / kg.	10.46 Baht / kg.
4.6) Farm land owning for dairy farming (average)	5.90 Rai	6.44 Rai	11.80 Rai
4.7) Size of area for pasture (average)	3.27 Rai	3.61 Rai	6.39 Rai
4.8) Cognizance in operating of dairy Cooperative (Mean score / Level)	4.54 / Medium	3.66 / Medium	4.52 / Medium
4.9) Satisfaction to dairy cooperative operation (Mean score / Level)	2.50 / Low	2.19 / Low	2.41 / Low

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
4. Farm operating factors			
4.10) Satisfaction in operation of government officer (Mean score / Level)	2.91 / High	2.69 / High	2.30 / Low
4.11) Satisfaction in earn a living by dairy farming(Mean score / Level)	2.27 / Low	1.77 / Low	1.82 / Low
4.12) Problems and obstacle in dairy farming (physical aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.12.1) Topography not suitable to dairy farming	10 persons / 3.10 / Medium	8 persons / 3.25 / Medium	15 persons / 2.40 / Low
4.12.2) Unsuitable climate	13 persons/ 2.92 / Medium	9 persons / 3.11 / Medium	22 persons/ 2.64/ Medium
4.12.3) Insufficient area for dairy farming	13 persons / 4.23 / High	9 persons / 4.67 / High	23 persons / 4.57 / Highest
4.12.4) Insufficient water source	10 persons / 2.90 / Medium	9 persons / 3.44 / High	23 persons/ 2.70/ Medium
4.12.5) Bad public utility	4 persons / 1.75 / Lowest	6 persons / 2.50 / Low	8 persons / 1.88 / Low
4.12.6) Inconvenient transportation	1 persons / 2.00 / Low	4 persons / 1.75 / Lowest	7 persons / 1.86 / Low
4.12.7) Far from milk collecting center of cooperative	1 persons / 1.00 / Lowest	4 persons / 2.00 / Low	8 persons / 2.38 / Low

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
4. Farm operating factors			
4.13) Problems and obstacle in dairy farming (economic aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.13.1) Expensive land, couldn't expand farm	12 persons / 4.42 / Highest	9 persons / 4.33 / Highest	23 persons / 4.52 / Highest
4.13.2) Lack of labour	10 persons / 3.50 / High	9 persons / 3.11 / Medium	23 persons / 3.43 / High
4.13.3) Income from farming were insufficient	13 persons/ 4.31/ Highest	9 persons / 4.11 / High	23 persons / 4.91 / Highest
4.13.4) Debt	12 persons / 3.42/ Medium	9 persons / 3.67 / High	23 persons/ 4.26 / Highest
4.13.5) Lack of capital supporting from government	13 persons / 4.08 / High	9 persons / 3.89 / High	22 persons / 4.82 / Highest
4.13.6) High tax of Sub district Administration Organization	1 persons / 2.00 / Low	1 persons / 1.00 / Lowest	2 persons / 2.00 / Low
4.14) Problems and obstacle in dairy farming (social aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.14.1) Community not admit dairy farming (pollution from waste water, feces)	12 persons / 3.42 / Medium	8 persons / 2.63 / Medium	20 persons / 2.90 / Medium
4.14.2) Rule regulation of municipality	4 persons / 3.25 / Medium	6 persons / 2.50 / Low	3 persons / 1.00 / Lowest
4.14.3) Lack of information in dairy farming	13 persons / 4.38 / Highest	8 persons / 4.13 / High	23 persons / 4.65 / Highest

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
4. Farm operating factors			
4.14) Problems and obstacle in dairy farming (social aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.14.4) Lack of contact with cooperative officer	8 persons/ 2.88 / Medium	9 persons / 2.67 / Medium	21 persons / 3.86 / High
4.14.5) Lack of contact with government officer	13 persons / 4.23 / High	9 persons / 3.44 / High	23 persons / 4.78 / Highest
4.14.6) Lack of dairy farming training	12 persons/ 3.67 / High	8 persons / 3.63 / High	23 persons / 4.87 / Highest
4.15) Problems and obstacle in dairy farming (farm operating aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.15.1) Lack of pasture	13 persons / 3.92 / High	9 persons / 4.78 / Highest	23 persons / 4.65 / Highest
4.15.2) Low milk production	13 persons / 3.23 / Medium	9 persons / 4.11 / High	23 persons / 3.70 / High
4.15.3) Animal got chronic disease	9 persons / 2.11 / Low	9 persons / 3.22 / Medium	19 persons / 2.68 / Medium
4.15.4) Animal had low fertilization rate	11persons/ 3.09 / Medium	9 persons / 3.11 / Medium	23 persons / 3.30 / Medium
4.15.5) Price of a raw milk were low	13 persons / 4.62 / Highest	9 persons / 4.44 / Highest	23 persons / 4.65 / Highest
4.15.6) Expensive concentrate feed	13 persons/ 4.85 / Highest	9 persons/ 4.67 / Highest	23 persons / 4.96 / Highest

Table 4.75 The comparison of farmers' personal basic factors, economic factors, social factors and farm operating factors which quit dairy farming from dairy cooperative size in upper northern Thailand. (continue)

Factors influencing to dairy cooperative's management process in upper northern Thailand	Large dairy cooperative (n = 13)	Medium dairy cooperative (n = 9)	Small dairy cooperative (n = 23)
4. Farm operating factors			
4.15) Problems and obstacle in dairy farming (farm operating aspect) (Number of farmer who has problems / Mean of problem / Level of problem)			
4.15.7) Expensive fuel	13 persons / 4.00 / High	9 persons / 3.33 / Medium	23 persons / 3.65 / High
4.15.8) Lack of modern equipment	6 persons / 2.50 / Low	9 persons / 3.67 / High	22 persons / 2.68 / Medium
4.15.9) Less experience in dairy farming	4 persons / 2.00 / Low	8 persons / 2.75 / Medium	23 persons / 3.91 / High

Section 4.1.2: Factors influencing to diary cooperatives' management process in the considering to representative of dairy farmers in Upper Northern Thailand

By the method of focus group discussion with 6 dairy cooperatives, the researcher started with making understanding with all participants by explaining the objectives of such discussion, process and expected results. The researcher also takes into account of research ethnic that all participants' real name will be unrevealed and substituted by alias when and wherever the quotation is used in presenting material information, feeling and facts in order to facilitate them to fully express their opinion.

From the result of focus group discussion, it was found that most agriculturists of 2 cooperatives in the past used to do agriculture especially, growing economics plant of the northern region such as garlic, longan, linchee, chili and tobacco. However, during 1989 – 1993, most of farmers has encountered severe drought that leads to low productivity consisted of increasing production costs and price lowering by the middleman – the problems were unavoidable to get away from. The particular problem also causes insolvency of the farmers who made a loan from both systematic and non-systematic sources to be invested for their own harvest. Such problem is continuously getting worse and affects to their decision to turn to do dairy farming instead of their own former occupation. While during such period the dairy farming has been highly promoted by the government, as some agriculturists who used to be employed in an industrial business for years felt bored with their career and wanted to do more independent kind of work without employer, they decided to do dairy farming. The followings are statements made by agriculturists whose names are replaced by alias:

> *"In the past, I grew garlic but the middleman always forces the price down. If I want to sell it by myself, I don't know to whom I am going to sell. So I have to sell it underprice."*
>
> Amphon: Focus Group Discussion

> *"Everything is more expensive regardless of fertilizer, pesticide or seed. It is getting hard to find labor in local area. The wage is also high. If I decide to grow it, I don't really know if I could make profit."*
>
> Masha: Focus Group Discussion

"I got a lot of debts. I can't grow the plant like I always did because there are too many in this neighborhood. When I sell, the price is brought down. There is only loss and loss."

Robin: Focus Group Discussion

"I used to work in the factory for many years. The salary is gradually raised, the work is so hard. I have less time to rest. I feel bored and I need the job that offers more independency becoming my own boss."

Tony: Focus Group Discussion

From the information gained from focus group discussion, it found that the major reason the most farmers turn to do dairy farming is that they want to raise their financial status. And during the time, there is dairy farming extension from the government officers in Chiang Mai which is more acceptable from the local farmers especially, in Sankampang District. It arouses interest of huge number of farmers in neighboring areas or provinces to study and make observation of dairy farming when they see success from the pilot dairy farmers who earn more money and is able to elevate themselves to higher financial status; most of all, there is a price insurance of raw milk from the government different from other agricultural products. All of these play important role in motivating the agriculturists to turn to do dairy farming. Although some of them do not have direct experience, they expect to receive aid from government and their associates who do the same career during the early stage of farming. The data can be evidenced by the following quotation:

"I once took an observation trip to dairy farm in Sankampang. I saw they got a big house and every family has their own car. It seems that their financial status is much better than us. I want to be like them."

Sornram: Focus Group Discussion

"At least the price is insured by the government. There will be a place to sell. I don't want to worry about being cheated like the old day."

Thongchai: Focus Group Discussion

"Others can do dairy farming, why can't we do it."

Micheal: Focus Group Discussion

"I think dairy farming can make you money every day. You don't have to wait like growing plants. And I don't have to worry about water or drought."

Choowith: Focus Group Discussion

Even dairy farming in the upper northern is becoming more admissible and there lied many local dairy cooperatives and farmer groups to help dealing with distribution of raw milk, raising quality of life and constituting fairness for farmers by adhering to principles of group purchase and sale, and joint business, the overall recent implementation of dairy cooperatives still remains obstacles. The important obstacle is that a membered dairy farmer lacks of knowledge and understanding in the code of conduct of the cooperatives which is considered as the most influential factor that discourages from efficient dairy cooperatives' management process.

Therefore the researcher arranges "focus group discussion" to get information about existing problems of dairy farming that affects dairy cooperatives' management process as well as to understand opinions of farmers toward dairy cooperatives of which they are a member.

The farmers who participate in focus group discussion from 6 different cooperatives mostly consist of male gender whose age is between 41 – 60 years old. They are married and mostly graduated from elementary level 4 while some graduated from diploma and bachelor degree. They have experience in dairy farming and being a member of a dairy cooperative over 10 consecutive years. Except from that, there is small number of farmers who just became a member of Maeon Dairy Cooperative for only few years due to a recent transfer from other dairy cooperative in neighboring area or private company. The reasons of transfer are listed hereunder:

> *"The former cooperative accused me of putting drug in the milk despite the fact that I haven't put anything in my milk. I swear to God."*
>
> Stephan: Focus Group Discussion

> *"This cooperative doesn't check the quality of milk as deliberately as the old one."*
>
> Somchai: Focus Group Discussion

> *"The company will buy milk in fixed rate, no additional price according to the milk quality and dairy standard."*
>
> Ananda: Focus Group Discussion

> *"Sometimes, the company cut the price down with no reason."*
>
> John: Focus Group Discussion

"When the milk is overflown the market, they push us by cutting down the price. In the worst case, they stop buying from us."

Santisuk: Focus Group Discussion

Most of farmer from 2 cooperatives primary use labor force from their family while some hire others as a result of huge number of dairies in their farm. The great majority of labor is an alien and the secondary source is from local labor. Hiring an alien labor frequently has to deal with more problems than that of local labor. For example, an alien labor is not permanent, they don't have a relevant license and in many cases, there is a language barrier. At times, these problem lead to misunderstanding in dairy farming stated below:

"For an alien worker, they stay with us not for long, and then they left. We waste our time teaching the new labor again. Moreover this type of labor doesn't have a working license."

Sornram: Focus Group Discussion

"No local labor wants to work for us because the job is hard and dirty."

Suwanan: Focus Group Discussion

Many farmers form both cooperatives neither occupy any position in the dairy cooperative nor in social as they reasoned that farmers has to start working from dawn since 05:00 to 10:00, in the midday, they have to mown the lawn or drive a truck to load a plant waste from the factory like peels of sweet corn and soybean, and potato bits and pieces to be used as roughage for dairies. Afterward they will resume working in the late afternoon from 15:00 to 20:00. Farmers have no day off and have no time for other activities. Some has indicated interesting viewpoint that some committee take the position against their own accord because they are afraid of any possible financial mistake which the chairman and committee shall share equal responsibility. Many of them do not actually intend to be a committee of dairy cooperatives particularly, the chairman.

"Dairy occupation is relativeless because you have to take care of the dairy cattle all day all night. You can go nowhere."

Suwanan: Focus Group Discussion

"Whenever there is religious ceremony or funeral, we have less time to attend and have to hurry back home because we worry about the dairies."

Patchara: Focus Group Discussion

"The President and committee must be liable for the mistake like the old time that the cooperative operated on loss. Who dares to take the position?"

Amphon: Focus Group Discussion

The aforementioned is not included for Phrae Dairy Cooperative (the second cooperative) as a result they are a small dairy cooperative that is formed by only 5 members – everyone has a position in the cooperative. One farmer suggests that due to most of members are old and undereducated up to elementary level, none of knowledge and understanding in administrating the cooperative is extensively applied. Thus Phrae Dairy Cooperative has slow development progress unlike other dairy cooperative. Most of them expect only a place to buy their milk on daily basis and money comes in at the end of each month. In addition, most of them are sibling and sometimes regulations and rules cannot actually be enforced.

"Most of members are sibling. How can we force them?"

Petchja: Focus Group Discussion

In an aspect of participation in cooperatives' activities, most farmers in the 1st cooperatives participate in activities provided by the cooperatives particularly annual ordinary meeting and monthly meeting. For participation in dairy farming training, most of them would rather to attend but if the training presenting in old or unpersuasive subject, they will choose to avoid by giving the reason that they already knew or the subject is impossible for them to implement and would be rather considered as wasting their time – they are not willing to attend.

"Most of participants today are the committee who take turn attending the training. The farmer loses their interest in this because nobody will take care of the dairies if they go to the training."

Michael: Focus Group Discussion.

Differently, the 2nd dairy cooperative will attend the activity every time it is arranged especially dairy farming training because it is a policy of the cooperative that needs attendance from its members. In accordance with the principle, they will have right and proper knowledge and understanding in dairy farming in order to cope

with the problems at hands regarding farm management, raw milk quality and animal sanitation. These problems are what the farmers are encountering at this present which directly affect to income both for individual and the dairy cooperative.

> *"The chairman said it is necessary for everyone to attend so that they can improve their own farm."*
>
> Somwang: Focus Group Discussion

> *"Members themselves set up the rule to fine 100 Baht for the person who fails to attend."*
>
> Jintara: Focus Group Discussion

About accessibility of information regarding dairy farming from media, most of farmers of both cooperatives shall acknowledged it from public relation committee located in the front of cooperative's office because they need to deliver the raw milk every morning and evening. They emphasize on income and expenditure announcement that they receive each month. Their secondary interest falls upon that the result from raw milk test conducted by Upper Northern Veterinary Development and Research Center who provides raw milk quality test for its members once a month.

For the result of raw milk quality test from Upper Northern Veterinary Development and Research Center, the farmers especially in the second cooperative do not understand the meaning, importance and connections between analyzed figures since the result is conducted into too academic forms and there is no explanation from the official or analyst.

> *"We give importance to the highlighted or underlined figures but we do not really understand its meaning from how it is arisen out because this appears in some months even we do the same method of farming."*
>
> Thongchai: Focus Group Discussion

> *"Most of members are not interested in this figure because they do not understand the meaning."*
>
> Choowith: Focus Group Discussion

About communication with the dairy official of the first cooperative, it found that most farmer have contact with artificial insemination official regardless of the district official, artificial insemination volunteer of dairy cooperative and independent

artificial insemination volunteer because the first dairy cooperative is a big organization – there are many dairy cattle so it is necessary to have a large number of officials. Moreover some cooperative such as Maeon Dairy Cooperative and Maejo Dairy Cooperative hire a veterinarian to take care of milking dairy cattle for its members.

> *"There are many volunteer. When we make a call, they are just shown up."*
>
> Umphon: Focus Group Discussion

> *"With presence of a veterinarian, we feel unworried. They can cure the cattle immediately."*
>
> Marsha: Focus Group Discussion

For the second cooperative, it found that most farmers have only contact with the district artificial insemination official in which there will be only one person per one cooperative – the artificial insemination official is unable to render service to farmers throughout the responsible area.

> *"We cannot hop the veterinarian to cure the dairy cattle every time because they already have an overloaded task."*
>
> Tony: Focus Group Discussion

For the pattern of farming, it found that most farmers of both cooperatives do dairy farming in a farmstead due to their limited farming area. The farmstead is located in the same responsible area of the farmers. It is easy to manage but hard to expand the farm. Another major concern is that the increasing community expansion. Particularly, a farmer who is a member of Maeon Dairy Cooperative and Maejo Dairy Cooperative whose farm is situated within the community area, has to deal with environmental controversies with the community which mainly occurred from undesirable smell such as cow dung and wasted water. In some cases of well-funded farmers who want to continue their career fix the problem by relocating to the new farming area remote from the community. In contrast, the low-funded one has to decrease numbers of dairy cattle. If they cannot solve the problem, they will eventually quit farming.

"In the past, there surrounded with deserted area but now the area is filled with houses."

John: Focus Group Discussion

"Now the land is too expensive. We cannot move out so we have to quit it."

Michael: Focus Group Discussion

As a matter of fact that the Department of Livestock may have a policy to get the dairy farm qualified for its required standard by aiming to raise quality of raw milk and help solve environmental problems, the standardization of dairy farms from the relevant authority is unable to completely achieve the standard that is set since the farmers do not comply with rules and regulations like making a note in forms, separating a farmstead according to the kinds of dairy cattle, relocating the farm away from residential area and managing waste in the farm. Even some cooperatives has allocated 30,000 – 50,000 Baht per each member to improve the farm, and doubled the purchase price of raw milk 0.20 Baht per one kilo for a farm that is qualified the standard to motivate its members to improve their farms, from the focus group discussion, it discovered that this idea is sometimes ignored because they think that doing so needs a lot of money and worthless. In addition, some cooperatives especially, the small dairy cooperative such as Maeta Dairy Cooperative and Phrae Dairy Cooperative, do not offer the said additional purchase price 0.20 Baht per one kilo. Some suggested that it is complicated to make a record - there is no time to do. While some suggested that they used to borrow the money from the cooperative to improve their farm and made a request to be evaluated by the official, it turned out that no official take such responsibility to inspect their farm. While they were waiting for the inspection, the equipment is damaged as days go by. From the opinions of farmers, it illustrates that the farmers do not actually understand the real objectives of dairy farming improvement.

"Making a note for everything is complicated and time-consuming."

Uncle: Focus Group Discussion

"Adjustment of the farm needs a lot of money. I do not know if it is going to worth. I do not want to lose the money."

Sornram: Focus Group Discussion

"The cooperative lend me 30,000 Baht to buy equipments. I already submit the application for evaluation but no official shows up. The equipment is getting damage and I have to borrow the money again."

Somchai: Focus Group Discussion

"If I can qualify the standard, they do not give me more money because they do not have it."

Woody: Focus Group Discussion

In surveying for numbers of dairy cattle in possession of the farmers, it found that most farmers of the two cooperative have more than 10 milking dairy cattle except from some farmers of the 2nd cooperative who have less than 10 milking dairy cattle in their possession. Most of them farmers plan to extend their farm in a foreseeable future if they have sufficient area and do not cause argument with the community. They will raise calf until they reach a breeding age taking about 1.5 – 2 years depending on maturity of the dairy cattle. Some would rather invest in heifers which are valuated around 35,000 – 40,000 Baht per one – this kind of dairy cattle can produce milk right away as the farmer ascribes that raising the calf takes longer time and has to take on high risk. The calf may get infected and die before giving milk. On the other hand, buying heifer contains risk of how much milk they can produce. Before buying, the farmers consider from appearance and maturity only.

"If the dairy cattle give birth to the male cattle, we sell them. If they are female, we keep."

Willy: Focus Group Discussion

"Buying milking dairy cattle is good; you do not waste your time raising it. But just only one thing, it is expensive."

Santisuk: Focus Group Discussion

"It is like buying a lottery ticket, If the dairy cattle give much milk, we are lucky."

Sornram: Focus Group Discussion

From focus group discussion, it found that most farmers from both cooperatives shall dispose of milking dairy cattle suffering a chronic disease that cannot be completely cured like Mastitis in dairy cattle and infertility. There are dairy cattle that are not suitable to be raised like dairy cattle whose age is more than 10 years old, that can produce less than 8 kilo per day, and that has breast abnormality.

According to the academic principle, these cattle have to be cut out of the group because in an overall image they will reduce ability in producing milk of other cattle while increasing production costs unknowingly.

The purchase price of raw milk offered by the cooperative is rated around 15.51 – 16.50 Baht per one kilo (as a result that during the time the researcher arranged this focus group discussion, the purchase price at factory was at 18.00 Baht per one kilo before the government reduced it to 16.50 Baht on April 29, 2009). However, it depends on condition set by the cooperatives, as they will grade the raw milk by the method of Methylene Blue and other methods. The cooperative tries to keep the gap between the member price and factory price at about 1.00 – 1.50 Baht per one kilo. This attempt of price control is considered as a tool in administrating the dairy cooperative whose purchasing condition must be approved from every member prior to its full enforcement.

"We call for a meeting every time whenever the price is adjusted."

Willy: Focus Group Discussion

For the second cooperative, it found that Maeta Dairy Cooperative and Phrae Dairy Cooperative have some of its members selling raw milk to a retailer in local area by cutting through the cooperative. They sell it at 20 Baht per one kilo which is a higher price than that is offered by the cooperative because the cooperative cannot enforce the rules and regulations in this matter with its own members.

"It will be resentful if we prohibit them to sell it to a retailer."

Traipop: Focus Group Discussion

From focus group discussion of both cooperative, it found that most farmers reasoned about higher cost in dairy farming is from adjustment of concentrate that is continuously raised. Some of them try to buy alternative animal feed such as rice bran, tapioca, or corn dust, etc. to mix with concentrate in order to reduce the costs. Sometimes, these raw materials are in short supply and more expensive. Due to dairy cattle is sensitive to the change of concentrate; the farmers stick to the old brand and formula even its price is continuously increasing. In order to prevent the dairy cattle from less productivity which is becoming more serious issue for farmers who do not

grow animal feed or stock it to use in drought season, they has to rely on instant animal feed only.

> *"The animal feed's price is up 10 Baht per one bag every year while the milk's price takes like 10 years."*
>
> Stephan: Focus Group Discussion

> *"I have no land for grass, and there is high competition in buying a young corn so I have to feed them with a straw and concentrate in a drought season."*
>
> Paula: Focus Group Discussion

> *"I cannot change the brand of animal feed. The dairy cattle is getting used to it. If I do change it, I probably get less milk."*
>
> Umphon: Focus Group Discussion

The problem of an increasing high price of concentrate is a major obstacle for the 2nd cooperatives because they have to buy the concentrate from the company buying the raw milk only – the price of concentrate is rated higher than the market price. Such company will designate the concentrate's quantity that the cooperative needs each month and the incurred expenses will be deducted from income at the end of each month. The farmers then try to use animal feeds and other roughage they can find in local area to reduce the costs such as dust corn, tapioca, tomato peek and young corn.

> *"Everything is dependent on something else otherwise we cannot sell our milk"*
>
> Tony: Focus Group Discussion

Most farmers of both cooperatives have 5 rai of land at maximum in their possession for dairy farming – the area is also used for residential purpose. Except from this, there is some rented area for growing plant for animal feed. The rent normally is paid on annum. The most favorable animal feed is Para grass since it is easy to grow, durable and does not need much attention like other species of grass. The secondary favorable one is Ruzi and Purple Guinea grass accordingly. The objective of this plant is to feed milking dairy cattle which there is not enough and needed to be replaced with other roughage especially when the drought season falls.

"Even I have many plots of land growing grass; I have to buy something else for the cattle during the drought season."

Somchai: Focus Group Discussion

"Lands in this area are not available for rent; they keep it to grow rice, bean or tobacco."

Robin: Focus Group Discussion

Most farmers of both cooperatives have no knowledge and understanding in management process of the cooperatives as the researcher forecasted. From the interview, we realized that most of them aim to make as much profit as they can and give first importance to fund and budget of the cooperatives. They came up with an idea that this managerial task is a responsibility of the president, committee and its officers as stated below:

"If the cooperative is well-funded, it can make a progress."

John: Focus Group Discussion

"Whatever projects the president and committee of the cooperatives said is good, we must believe them."

Woody: Focus Group Discussion

This points out that most farmers would aim for self benefit rather than common one. They have a picture that the cooperative is just an organized group of persons who do dairy farming, having duties to provide a place for its members to where raw milk is sold, facilitate and supply necessary production materials to dairy farming as well as fund its members.

For the satisfactory level of the dairy cooperatives' management process, it found that most farmers of the two cooperatives have high satisfactory level by reasoning that becoming a member makes them feel secure and contributes to a better living condition. Moreover this kind of confederation brings about bargaining power dealing with the processing factory, interdependency, support and convenience in providing production materials to its members.

"Now I have enough money to support my family and send them to school. Since I had become a member, I had no debt like the old day."

Patchara: Focus Group Discussion

"Honestly, everybody wants to extend their own farm but they are afraid that it is going to be an investment for nothing; because sometimes the milk is unwanted by the factory especially during the end of academic semester of the past years."

Santisuk: Focus Group Discussion

In particular case, some farmers of the 2nd cooperatives plan to wind up a dairy farm in the future as a result that there is no much success as they firstly expected. Part of the problem would be from the management process that confronts the problems all the time. The farmers have less income insufficient for them to survive consisted of substantial debts they need to pay and increasing age of farmers. All of them children do not think about succeed their parent's occupation.

"Actually, I want to stop farming now, but I still have debt with the cooperatives and BAAC."

Sinjai: Focus Group Discussion

"Our cooperative is small. It always has problems so it cannot be developed as the committee has planned in the first place."

Robin: Focus Group Discussion

For satisfactory level of the dairy farmers towards operation of relevant government authorities, it found that most farmers in the 1st cooperative has excellent level of satisfaction since the government authorities will lend their hands into the matter and help solving the problems. Additionally, the numbers of related government officials are suitable for the number of dairy farmers in a whole image so that it contributes to prompt communication and solution.

For the satisfactory level of the 2nd cooperative's farmers towards operation of relevant government authorities, it found that they have normal level of satisfaction particularly, a farmer who is a member of the cooperative in the remote area. Some has negative attitude towards the related official as described below:

"Sometimes when we make a call to them, they do not answer the call. They just ignore to help us. We have to help ourselves."

Tony: Focus Group Discussion

"The official comes when they need information. They just left when they already have it."

Robin: Focus Group Discussion

Another issue the farmers from both cooperatives need the government official or related authority to do autopsy to verify the actual cause of death of the dairy cattle is deemed important to lay out initial proper protection and solution whenever the dairy cattle is sick. One dairy cattle spends a long time to raise and cost a lot of money. An average price per one dairy cattle is around thirty thousand Baht. If the milking dairy cattle die, the farmer can only sell its meats in exchange of around 1,000 – 2,000 Baht per one cattle.

> *"If we know the cause of death, we can prevent it or give a preliminary treatment."*
>
> Michael: Focus Group Discussion

> *"I paid over thirty thousand Baht per one cattle. When it dies, I get only 2 thousand Baht back."*
>
> Stephan: Focus Group Discussion

About the question on FTA between Thailand, Australia and New Zealand, for dairy goods and products, it found that most of farmers from both cooperatives heard of the word "FTA" from newspaper, radio, television, academician who came to give lecture and the committee of the cooperatives. They understand that there is an import of milk powder from other country especially Australia but they barely have an idea of its in-depth details such as year of agreement that becomes effective, government policy that supports the farmers and necessary action the farmers need to take to prepare for future impact.

On the questions about the impact of FTA to their dairy career from which they may probably receive, it found that the farmers have different opinions divided into 2 groups:

For the farmers who think that FTA has impact to their career, they reason that import of milk powder from other countries shall become one major influence for the factory to use the milk powder instead of raw milk that is produced in Thailand since the production costs is substantially lower than that is produced in domestic. It is easily noticeable from oversupply of the raw milk which happens almost every year. The farmers have to pour away the raw milk to protest against the government. Another important issue is the use of milk powder mixed with water and raw milk to manufacture ready-to-drink milk in which no serious action taken by the authority in

testing its quality and enforcing substantial punishment for the one who violates it. Particularly, the school milk as a supplement frequently encounters this problem as well as discontinuance of campaign to raise awareness of drinking ready-to-drink milk produced from 100% raw milk among Thai people.

> *"The problem of oversupplied milk one way is caused by the factory that tends to use milk powder instead of the raw milk."*
>
> Uncle: Focus Group Discussion

> *"When the milk is expired, we fix the problem at a time."*
>
> Umphon: Focus Group Discussion

> *"When the government changes, the policy also changes; it lacks of consistent implementation to promote Thai people to drink milk more and more."*
>
> Willy: Focus Group Discussion

For the farmers who think that FTA has no impact on dairy farming and does not worry Thai dairy farmers. They reasoned that even importing milk powder from other countries would affect Thai dairy farmers; the government must have a policy to decrease the damage. Moreover some added that enforcement of the FTA agreement will become full force and effect in the next 17 years (2025). When the time comes, they might stop doing dairy farm. And production efficiency of Australia's dairy farmers is much better than that of Thai dairy farmers, so it is impossible for Thai farmers to compete with as stated below:

> *"When the time comes, the government would not let the farmers go down with it."*
>
> Paula: Focus Group Discussion

> *"Until the agreement will come to take full effect, I would stop do farming already."*
>
> Thongchai: Focus Group Discussion

> *"Thai farmers cannot compete with them, they are more developed."*
>
> Robin: Focus Group Discussion

For the opinion on career inheritance to their descendants, it found that most farmers from both cooperatives have an idea that it depends on willingness of their descendants because some of them are too young or studying and graduated a higher

education. They have more choices and the farmers would not let their children to succeed their career, but this is just one choice for them in the future.

> *"Dairy farming in the eyes of the today children is hard, dirty and time-consuming. They do not want to do it."*
>
> Suwanan: Focus Group Discussion

> *"We should allow them to work somewhere else to find experience. If they cannot take the job, they can come back to do dairy farming."*
>
> Woody: Focus Group Discussion

For the required assistance in several aspects the farmers needs, it found that the primary and urgent need of the farmers from both cooperatives is adjustment of concentrate's price that should be reduced. The secondary need is adjustment of raw milk's price that should be increased. They stated that the production material costs are getting skyrocketed like concentrate, fuel, electricity and labor wage, etc. They need to carry this increasing burden – some of them who operate on loss eventually quit farming. Another matter is that they should reach to information regarding a new way of dairy farming and a field study by observing the dairy farm of successful farmers in other area to apply the knowledge with their own farm to be more efficient.

> *"Every farmer's need now is about the price, we want them to decrease the price of concentrate."*
>
> Somchai: Focus Group Discussion

> *"It would be nice if the official use the new techniques, so we can use it."*
>
> Somwang: Focus Group Discussion

In an aspect of training from diary-related authority, it found that most farmers from both cooperatives want to be trained about how to prevent the disease and how to initially react with the disease. They reasoned that when the dairy cattle get sick, the farmers can give the first aid so they do not need to rely on the official every time. Moreover it is also considered as reduction of the curing costs. Another secondary need is the training about farm management to contribute the farmers to be more efficient, as this will result in higher quantity of milk and higher income.

"If we have basic knowledge about curing the dairy cattle, we do have to wait for the veterinarian (related official) especially during the late night."

Traipop: Focus Group Discussion

Consequently, the farmer who joined a focus group discussion commented that the causes the farmers had to stop farming in 2006 can be concluded into 6 major matters as follows:

1. Problem about buying raw milk from the dairy farmer
2. Problem about farm management
3. Problem about farmers' negligence that they do not take into consideration of their suitability before starting the dairy farming
4. Problem about delayed payment from the company
5. Problem about dispute between farmers and cooperatives
6. Other problems such as farmer's age, health and changing economic status, etc.

These aforementioned problems can be briefly explained as the following:

1. Problem about purchase of raw milk from the dairy farmer

From the focus group discussion, the buying price of raw milk is too low not in corresponding with economics status at that time (2006 – 2007). While the government guarantees the factory price at 12.50 Baht per one kilogram, in fact, the factory buy the lower price as they rely on quality of raw milk as a criteria in buying such from a dairy cooperative. After the dairy cooperatives deduct managerial costs 1.00 – 1.50 Baht per one kilogram, the farmer will only get an average 9.00 – 10.00 Baht per one kilogram for the raw milk. However it also depends on the quality of the raw milk. If the farmers has 4th grade raw milk, the lowest grade, they will get only an average of 7.00 – 8.00 Baht per one kilogram to the contrary with the production costs that are getting higher and higher especially, concentrate and fuel. With these reasons, some of farmers decided to quit by wholesaling the dairy cattle to a slaughter house or changing to raise beef cattle instead; whereas some of them turn to do other occupation regardless of agricultural or industrial career in their area.

Such problem has a great impact to the 2nd cooperatives because of a small farm (less than 20 dairy cattle) and low-funded status particularly when the raw milk faces low buying price circumstance that does not cover the

production costs. The farmers who no longer carry the production cost of raw milk would give up the business at last and change their mind to do other occupation; for example, the farmers who quitted dairy farming in Thoeng District, Chiang Rai Province turn to do shrimp or crop farm as before.

> *"We have not many dairy cattle, so we get less milk. It is not worth. And we have a lot of debts. It is better for us to change to other occupation."*
>
> Somwang: Focus Group Discussion

> *"Since we get less money from selling milk, we change to do shrimp farm instead like others do. But eventually it is not survived."*
>
> Robin: Focus Group Discussion

As a result that the farmers decide to quit dairy farming during such mentioned period, it directly affects to quantity of milk that is produced in a day – there is a shortage of milk supplied to the process factory in upper northern region. The consequent problem is the scramble of milk within such area; the milk price is adjusted higher and the process of milk quality test is less complicated as a motivation to the farmers. From this incident, there occurred a great number of transfers among farmers who will supply raw milk to other cooperatives or become a member of a private company in neighboring area. The cooperatives contain little number of members. The problem specifically happens with the 1st cooperatives (Maeon Dairy Cooperatives) due to there are many cooperatives and private companies located in the neighboring area.

> *"Many people change to deliver milk to the company because they have a better offer and the milk is necessarily undergone a deliberate test like that of the cooperatives."*
>
> Thongchai: Focus Group Discussion

2. Problem about farm management

From what we learned, it appears that the farmers who quit doing dairy farm are likely to encounter a problem of inefficient farm management; they do not have specific knowledge in taking care of dairy cattle's physical condition. The dairy cattle then produce less low quantity and quality of milk. Such problem mostly lies in farmers who are a member of the 2nd cooperatives because they have small farm that always relies on farmer's competency and their own economic

capacity. Most importantly, they also have fewer funds which are unable to be used for farm improvement to be good and standardized as recommended by the Livestock Department. As their farms are small, the government officers, education and private institutes frequently ignore to give consult and serious take the matter into their account.

> *"Most of farmers who give up the farming would do it according to what they can afford, so the dairy cattle produce less milk."*
>
> Choowith: Focus Group Discussion

3. Problem about farmers' negligence that they do not take into consideration of their suitability before starting the dairy farming

The farmers who decided to quit came to be a member of the dairy cooperatives via a village leader such as Sub-district Headman, Village Headman and Group Leader, as well as the government officers without considering about their own readiness and suitability in doing dairy farm. Such obstacles can be a place to raise the cattle, to grow animal feed, labor and circulating funds. Their only hope of getting support is from the government regardless of dairy cattle, medicine and services, that causes a lot of problem during an early stage of farming. Some decide to quit. There also found that some farmers consider this occupation as a secondary job to increase income for the family. They do not have time to thoroughly take care of the farm. More over dairy farming need hard-working, deliberation, and carefulness from dawn till dusk. That is to say, if the dairy farming is just a secondary job, there will be a lot of problem particularly, to obstruct them from success. Finally, they have to wind up the farm. The following problem is the outstanding and due debts they have with the cooperatives.

> *"Many people who uncompleted the business, while they still have debts with the cooperatives, they moved away."*
>
> Tony: Focus Group Discussion

From the focus group discussion, it found that both cooperatives have a problem of outstanding debts from the farmers who quitted halfway because during the initial stage of operation, they must loan for the investment from the Department of Cooperatives Promotion who expects to enroll

more members which results in increasing milking dairy cattle and milk quantity per day. This also means that the dairy cooperatives can make more profit.

4. Problem about delayed payment from the company

From focus group discussion, it illustrates that during the mid of 2006, the company who bought raw milk from the dairy cooperatives has delayed in payment as firstly agreed with the cooperatives. This makes the small and middle dairy cooperatives have to face with shortage of circulating fund that would be used in administration of the cooperatives and paying dividend to its members each month. The problem extremely affects the farmers who are not well-funded. Some feel weary and downhearted with this occupation because they cannot carry weighty burden especially the unpaid money to be used in living. They decided to quit dairy farming and turned to do other occupation that offers more financial secureness rather than risking their life and family with this occupation.

> *"In the past, I have to wait several months to get the money; sometimes they do not the whole amount."*
>
> Sinjai: Focus Group Discussion

> *"Anybody who gets a lot of money should be considered lucky. For the one who has less money, they have to make further loan otherwise they will be precluded from the dairy business."*
>
> Traipop: Focus Group Discussion

5. Problem about dispute between farmers and cooperatives

The researcher discovered from focus group discussion that some farmers who decided to stop doing dairy farming have dispute with the dairy cooperatives especially when it comes to the milk quality test. Every cooperative would determine the buying price from its members by relying on the quality of raw milk. Even though tools each cooperative uses to check the raw milk quality are different, they mostly emphasize on the examination of antibiotics in the raw milk. Therefore the cooperatives will repeatedly check the raw milk collected from each meal (morning – evening). In a case that antibiotics were found positive in the raw milk of any farmer, the farmers must be responsible for the whole amount of milk which they will have to pay a huge amount of fine to the company. Usually, the accused farmer will not take responsibility and this cause dispute between farmers and

the committee or the official of the cooperatives. Sometimes the official neither explains the reason nor makes further inspection to seek out the fact. The farmers feel that they are treated unfairly and have a negative image towards the dairy cooperatives. As this is a sensitive matter, some farmers decided to move to another cooperatives or company, even quit doing dairy farm.

> *"Sometime the committee and officials did not come to reconcile the resentment. So we re-act the same manner."*
>
> Michael: Focus Group Discussion

Another reason of transfer is from idealistic conflict among the farmers themselves. To illustrate, in 2005 Maeon Dairy Cooperative had a conflict which occurred in the operation of the cooperatives among its committee so that makes separation into groups of persons who share the similar idea and that was how Phrathat Doipatang Dairy Cooperative was established.

6. Other problems

From focus group discussion, it found that farmers who recently quitted dairy farming are caused by other problems such as increasing age or underlying diseases. As they do not have anyone to take on the occupation, they decide to dispose of the dairy cattle and milking equipments to other dairy farmers. It also found that some farmers decide to sell the land to capitalists to build a tourist attraction like resort, spa and golf course especially, in Maeon district of Chiang Mai province as a result that such area has stringers of hot spring lying underground that make the land price very expensive – averagely around 7 – 8 million per one rai. With these reasons, the farmers decide to sell the land instead of using it for the usual activity like dairy farming.

Moreover the researcher has discussed about the FTA between Thailand, Australia and New Zealand. It found different opinions from the participating farmers which can be divided into 3 groups:

1. A group of farmers who have never heard of the term "FTA" stated that the dairy career keeps them busy all day long so that they have no time for information like this.

"I have to wake at 4 in the morning to draw milk from the cattle, and after that I have to mown the grass. In the evening, I have to draw the milk again which will be finished around 2 pm. It becomes like this every day so I have no time for news, watching drama like anybody else."

Nussaba: Focus Group Discussion

This group has an idea that FTA is something far-fetched from them and its effect would not happen within this foreseeable future. They do not give importance to receive the news of make understanding about FTA. And they do not have a plan to deal with such unforeseen effect.

2. A group of farmer who have ever heard of the term "FTA" from various media especially, television and radio, and from the statement of the chairman and committee of the dairy cooperatives, and from professor in the education institute who used to give them lecture and training during the past year. When asking about understanding of FTA, it found that most of them have very limited level of knowledge. They understand that FTA is involved with importing of milk powder from other countries in massive amount which will affect to the processing factory in Thailand who will turns use milk powder rather than domestic raw milk because it helps reducing the production costs of ready-to-drink milk when comparing with the raw milk from the dairy farmers. The major concern is that it will consequently cause oversupplied milk and the farmers often come out to protest the government by pouring away raw milk.

3. A group of farmers who have good and right understanding of the FTA mostly are the farmers who occupy the position in the dairy cooperatives especially the chairman and committee of the cooperatives since they have been provided an opportunity to regularly attend a seminar or training arranged by the dairy-related organization and education institutes. Moreover it also found that some chairman of the cooperative used to take an education field trip to Australia. From the mentioned reasons, this group of farmers has well understanding towards FTA.

Consequently, the researcher asked the participating farmers about possible impact they probably receive from the FTA. The farmers' opinions can be divided into 2 groups as follows:

1. A group of farmers who has an opinion that FTA will affect to the dairy farming career in Thailand think that FTA will affect to the reduced raw milk price that is produced in the country to widen the opportunity to compete with milk powder that is imported from foreign country. The consequent result is that the more dairy farmers will decide to quit farming and many agricultural institutes (dairy cooperative and dairy group) will be closed down in the end. There will be collateral damage to the consumer in Thailand who consumes ready-to-drink milk that is contaminated with milk powder which has fewer nutrients than that is produced by the 100% raw milk.

2. A group of farmers who has an opinion that FTA will have no impact to dairy career in Thailand, think that its effect will not reach them yet since the agreement will be enforced in many years ahead. And if FTA actually has impact on them, the government when the time comes would lay out a measure to help the Thai dairy farmers to continue their career. There are few among them think that Thai dairy farmers' efficiency will be improved to be equal to the foreign country before the agreement will be effective.

> *"When such agreement becomes effective, I would stop doing dairy farm by that time."*
>
> Michael: Focus Group Discussion

Nevertheless most farmers has given their opinions towards the FTA, in fact they do not realize to relevant improvement that they have to encourage it all the times without waiting for the enforcement of the FTA agreement. As they thought that this is far from them and has not happened yet, they do not have motivation to improve their own farm to be more efficient. This kind of misunderstanding needs to be fixed promptly by all concerned parties because it will directly affect to the dairy farmers themselves and the management process of dairy cooperatives in a whole image as well.

For information gained from focus group discussion as explained above, the researcher has proceed a qualitative analysis by using methods of successive approximation along with content analysis. Then the researcher will identify the index to make a connection and grouping each issue to create factors or variables in describing about logical influences that may effect to management process of dairy

cooperatives' in the view point of dairy farmers in upper northern Thailand. There consisted of 3 major factors as the following:

1. Factors arising out of the dairy farmers

This factor is deemed important to management process of the dairy cooperatives because the famers are one significant device in driving dairy cooperative to success. Thus, the trouble-besieged farmer will disadvantage to the management process of the dairy cooperatives. From the focus group discussion, it found that farmers' problems can be concluded as follows:

1.1. Knowhow about raising dairy cattle and farm management

Most of farmers have incorrect understanding about raising dairy cattle according to the principle - they usually ignore it like separating and selecting of milking dairy cattle and managing the dairy farm. This brings about problems of raw milk quality and of increasing production cost unknowingly. Moreover most farmers have no knowledge in managing production, marketing and funding that causes unsuccessful dairy farming as it should be. They neither have knowledge nor understanding in operation of the dairy cooperative as reflected by the statement of the interviewees as stated below:

> *"If the cattle give birth to male cattle, we sell. If it comes out a female, we keep."*
>
> Willy: Focus Group Discussion

> *"If the cooperative is well-funded, it can be much developed."*
>
> John: Focus Group Discussion

1.2. Participation in management of dairy cooperative

Most farmers are not "interdependent and support each other" – they aim to only personal benefit more than common benefit which is normal thing for Thai farmers. They think that managerial task is responsibility of a chairman, committee and official of the dairy cooperatives as evidenced by the following statement gained by focus group discussion:

> *"If the chairman and committee of the cooperative said this project is good, we have to believe them."*
>
> Woody: Focus Group Discussion

1.3. Material in Raw milk production

Most of them are short of material necessary in production such as land to raise dairy cattle and to grow animal feed, labor and fund etc. This affects the farmers being unable to extend the dairy farm especially the farmer who operates a small farm. Consisted of consistent expansion of community that cause environmental dispute between the dairy farm and the community, the farmer made up their mind to stop doing dairy farm. Many production material has been adjusted the price to higher price particularly, instant animal feed which makes the production cost higher as well. As you can see from the comment of the participating farmer in focus group discussion as follows:

"No local labor wants to do this job because it is hard and dirty."

Suwanan: Focus Group Discussion

"Animal feed is upraised each year but it takes ten years for milk."

John: Focus Group Discussion

1.4. Dairy farming information accessibility

Farmers mostly ignore information regarding dairy farming because of limitations; they are more interested in other programs than agricultural news, time of information delivering is not suitable, and they have less time to receive the information because they need to feed their family, that is to say, they care about survival than seeking for dairy farming knowledge.

Most of farmer lacks of motivation in self-improving. They think that even today they still sell raw milk while using the old way of farming. In a worse case, the government will take charge to care of the dairy farming when the problem occurs like every time. It reflects that they prefer to be a receiver who is not self dependent. This is considered as a substantial attitude barrier of the farmer to develop their dairy farming in the future as stated by the interviewee of focus group discussion as follows:

"I have to wake at 4 in the morning to draw milk from the cattle, and after that I have to mown the grass. In the evening, I have to draw the milk again which will be finished around 2 pm. It becomes like this every day so I have no time for news, watching drama like anybody else."

Nussaba: Focus Group Discussion

"When the time comes, the government would not let the farmers go down with it."

Paula: Focus Group Discussion

2. Factors arising out of the dairy cooperatives

As the dairy cooperative has an important role in supporting and developing the dairy farming of its membered farmers, if the management of the cooperative is inefficient, it shall effect to dairy farming of its members as well. From focus group discussion, it found defect in management process which can be included as the following:

2.1 Harmony between its members

In the present time, the operation of the cooperatives is "independent and unsupportive to each other" as it can be clearly seen from the buying price of raw milk and determination of raw milk quality standard that is different. This causes transfer of its members to other cooperatives and leads to conflict between the dairy farmers that are evidenced from the result of focus group discussion as follow:

"The cooperative does not do thorough check of the raw milk quality as before."

Somchai: Focus Group Discussion

2.2. Leadership of the cooperative's committee

The committee somehow lacks of leadership because they do not have relevant knowledge and understanding in the right principle of the cooperative's operation. Some of them take the position against their will. This will affect directly to efficiency of the assigned tasks and the overall operation as well. It can be evidenced from focus group discussion:

"Sometime the committee and officials did not come to reconcile the resentment. So we re-act the same manner."

"Michael: Focus Group Discussion

2.3. Enforcement of regulations, rules and provisions

The 2nd dairy cooperative who encounters a problem of regulation, rule and provision enforcement are mostly close relatives to each other

which deteriorates its efficiency in carrying the major task as you can clearly see from the result focus group discussion as follows:

"Most of the members are brother and sister. How can we force them?"

Petcha: Focus Group Discussion

2.4. Production material supplied to its members

Some cooperatives of the 2nd group cannot handle with the problem of material supply due to limited circulating fund – they are unable to response to the farmer's high need throughout their responsible area.

"Our cooperative is small. It always has problems so it cannot be developed as the committee has planned in the first place."

Robin: Focus Group Discussion

3. Factors arising out of the dairy-related government authorities

If the dairy-related government officers who is appointed to support, promote and give advice to farmer and dairy cooperatives is deficient and unable to response to the farmers and cooperatives' need, the development of dairy farming and management process of dairy cooperative is impossible to be practicable. From focus group discussion, it found that operation of the diary-related government officers still encounters the following problems:

3.1. Operation of government official

The government official usually has a biased and discriminated attitude – they give special attention to successful farmers and cooperatives (1st cooperative) than those who is unsuccessful (2nd cooperative). So the successful farmers and cooperatives will be regularly informed news and knowledge. From focus group discussion, it found that:

"Sometimes when we make a call to them, they do not answer the call. They just ignore to help us. We have to help ourselves."

Tony: Focus Group Discussion

3.2. Passing on dairy technology

Now passing on dairy technology from the government officers especially, the training does not receive well participation from the farmers as

much as it could because the subject of training is not responsive to the actual need of the farmers as it can be clearly seen from focus group discussion as follows:

> *"Most of participants would be committees who take turn attending because the farmers hardly leave their farm – there will be nobody taking care of the cattle."*
>
> Michael: Focus Group Discussion

3.3. Consistency of policy implementation

The obvious policy is a campaign promoting people to drink more milk which will be applied only when the milk is unwanted by the company or the factory despite that this campaign needs to be carried through on consistent basis. In addition, the appropriate budget allocation in operation of the official in connection with the dairy farming is still a problem. From focus group discussion, it reflects that:

> *"When the government changes, the policy also changes; it lacks of consistent implementation to promote Thai people to drink milk more and more."*
>
> Willy: Focus Group Discussion

Logical influences that probably affects to the management process of dairy cooperatives in the viewpoint of the dairy farmers in upper northern Thailand can be briefly explained in the chart below:

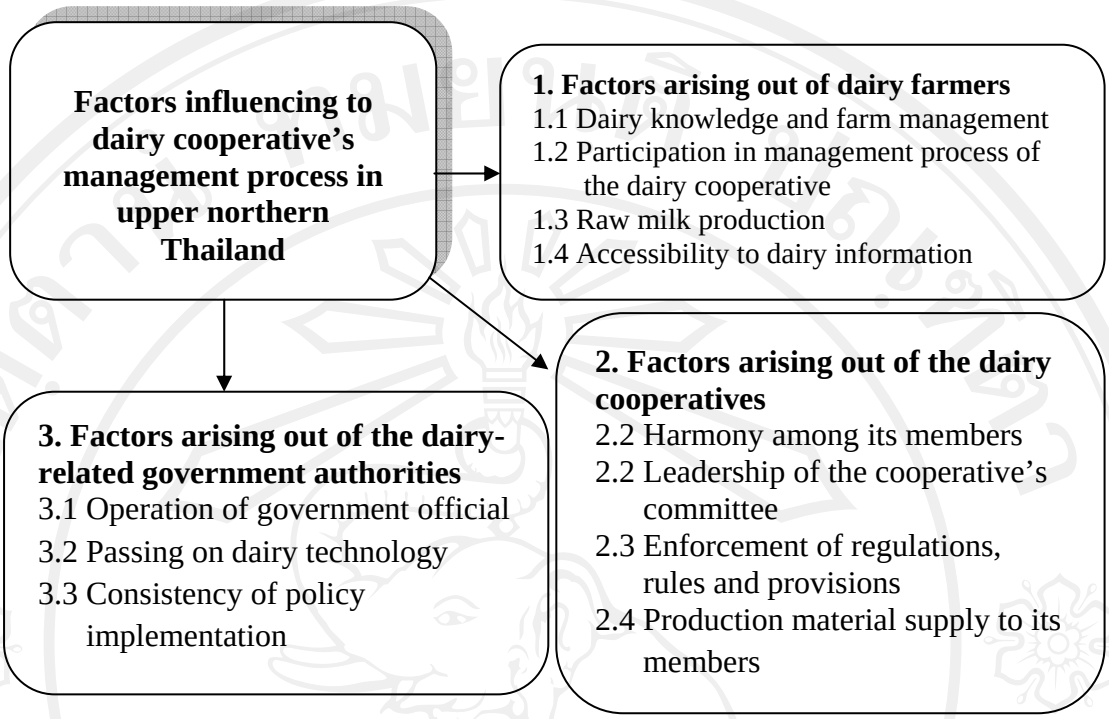


Figure 4.1: Factors influencing to diary cooperative's management process in the considering to representative of dairy farmers in upper northern Thailand.

Section 4.2: Dairy cooperative's management process: Organization - level

Section 4.2.1: Analysis of status of dairy cooperatives and milk factories in Upper Northern Thailand

This qualitative research is aimed to study efficiency of dairy cooperatives and milk factories in upper northern Thailand by using SWOT analysis to compare strength, weakness, opportunity and threat. The participants will be considered for internal factors which are managerial resources or so called as 4M: man, material, money and management. The external factor is also taken into consideration as well. The activity was held on May 16, 2008 at Chiang Mai Rattanakosin Hotel under cooperation from Learning Institute for Sustainable Development, Northern Foundation for Development and Regional Bureau of Animal Health and Sanitary 5, Chiang Mai.

The data was collected by observing participation of all participants and from the questionnaire each dairy cooperative and milk factory has replied. The knowledge gained from this activity including opinion, suggestion, problem and obstacle are also recorded as material information of this research. The data will be categorized and analyzed to answer the objectives of this research by using the technique of content analysis and the result of research is presented by describing techniques.

Results of focus group discussion combined with SWOT analysis

1. Diary cooperatives in upper northern Thailand

1.1. Strength and weakness of dairy cooperatives in upper northern Thailand (internal factor)

Group 1: representatives from large dairy cooperatives

The participants who joined in focus group discussion and whose opinions were analyzed by a SWOT analysis technique are representatives from 5 large dairy cooperatives such as Chaiprakarn Dairy Cooperative for 2 persons, Chiang Mai Dairy Cooperative for 2 persons, Maejo Dairy Cooperative for 2 persons, Maeon Dairy Cooperative Limited for 2 persons, and Lamphun Dairy Cooperative Limited for 2 persons totaling 10 persons. The result can be summarized as the following:

Strength of large dairy cooperative

Man: Large dairy cooperative has a leader who has good vision and capability. They are also honest, sacrificed and determined to the managerial tasks of the cooperative to achieve the highest goal. From what they learnt in the school, most official are correspondingly qualified for their job – they have specific expertise in several fields such as raw milk quality test, administration task and dairy cattle physical care. The most important is that most of its members give well cooperation to activities provided or arranged by the cooperative. They are open-mined for the new dairy technology that contributes to the substantial development among them.

Material: Large dairy cooperative has necessary tools and equipments in checking the raw milk quality and a standardized cooling tank, storage of raw milk that is qualified by the GMP standard of Department of Livestock, and is able to undertake the raw milk from its members. This make the raw milk collected in each day good quality acceptable for the processing factory.

Money: Large dairy cooperatives have sufficient circulating funds in carrying out their routine business and support its members such as giving financial loan, distributing production factors regarding dairy farming and selling consumable products that are necessary for living to its members, etc.

Management: Large dairy cooperative use the management structure according to what required by the Cooperative Promotion Department – the structure is precise and well-organized as it separates to divisions working together with a government officers and education institute on regular basis to efficiently run the cooperative on the democratic principle. They have been receiving academic support in dairy farming including using information technology for the operation of the cooperative.

Weakness of large dairy cooperative

Man: due to its large size and most of dairy farmers are old and is educated from only elementary school, they have no knowledge in managing the dairy cooperative which is considered as a major obstacle to implementation of the cooperative's objectives. Moreover some have dispute among its members – this leads to separation to small groups. As a matter of fact that a huge number of members

frequently encounter a problem that lacks of specialists especially, husbandry and veterinarian, there is not enough man resource to pass on knowledge and knowhow to cure dairy cattle. Most importantly, the members lacks of right and proper knowledge in doing dairy farm according to the principle of the cooperative.

Material: Large cooperative unavoidably has to face a problem of wool and equipment shortage in checking raw milk quality that can completely and deliberately checked for the raw milk's component. This somehow is inferior to the factory. In addition, it also found that some cooperative cannot developed and extend its building and a raw milk storage since the committee of the cooperative does not want to invest in the land that cannot be owned outright by the cooperative.

Money: they have to rely on financial support from the government officers especially; Department of Cooperative Extension to be invested in several affairs such as oil pump, animal feed silo and loan service with minimum interest to its members. As many cooperatives has a lot of outstanding debts incurred from improvement of raw milk storage center that is qualified GMP standard, land purchase, and vehicle purchase for raw milk transportation, they need a loan to be used as a circulating funds in operation of the cooperative whose managerial cost is continuously increasing every day.

Management: Large dairy cooperative has complicated and hierarchy management structure, the operation sometimes causes delay because every process needs to go under the regulations of the cooperatives. That is to say, each matter has to be brought into a monthly meeting. Whenever mistakes happens, it can leads to resentment between members and the committees. Additionally, the management committee is mostly the same person who runs the cooperative for quite sometimes. As a result that the members do not want to be responsible for the mistake like the committee in the past, none of participation in management can be seen from them. From what is learnt, it reflects that members have actual knowledge and understanding in right principle of cooperative management which directly affects to the management in a whole image as well.

Group 2: representatives from medium dairy cooperatives

The participants who joined in focus group discussion and whose opinions were analyzed by a SWOT analysis technique are representatives from 6 medium dairy cooperatives such as Baanpahteung Huaymor dairy Cooperative for 2 persons, Maewang Dairy Cooperative Limited for 2 persons, Chiang Rai Dairy Cooperative for 2 persons, Banta Dairy Cooperative for 2 persons, Phrathat Doipatang Dairy Cooperative for 2 persons, and Sankampang Dairy Farmer Group for 2 persons totaling 11 persons. The result can be summarized as the following:

Strength of medium dairy cooperative

Man: Medium dairy cooperative' strength is having a good leader and committee likewise that is large dairy cooperative. The officials are also specialized in specific field especially the officials who do raw milk quality test and promote dairy farming. Most of farmers in this medium dairy cooperative give well cooperation to establish a standardized dairy farm.

Material: they have standard tools and equipment in checking raw milk quality, and raw milk storage center is being on the process of improvement to qualify GMP standard while some cooperative has a machine that is capable to produce pasteurized milk and processed milk products such as ice cream, yogurt and drinking yogurt which another way create income to the cooperative.

Money: Medium dairy cooperative has sufficient circulating fund in providing loan, distribution of dairy-related products for its members and for the overall operation of the cooperative.

Management: they have quite precise management structure and been receiving support from the government officers and education institute particularly, right way of doing dairy farm which would be passed onto it member and knowledge about management to the committee and official on regular basis. There is a usage of information technology in carrying the task with more efficiency.

Weakness of medium dairy cooperative

Man: Medium dairy cooperative faces similar problem as the large dairy cooperative. Moreover there also found "a dependent farming" whereas some of them members do not give cooperation to the cooperative because they have

an idea that the managerial tasks should be sole responsibility of the committee and official and most of them do not have knowledge and right way of doing dairy farm.

Material: lack of tools and equipments is still considered as a weakness of a medium dairy cooperative particularly, the tool used in checking raw milk quality – the farmer can only check its quality at elementary stage that is interior to the processing factory who many times lowering the buying price. In addition, the cooperative is unable to reach its maximum expansion since the land price is too expensive and they do want to make more troubles with the neighboring community.

Money: there is a shortage of budget in carrying out its operation or even delay and cessation due to some medium dairy cooperative already have a lot of debts in hands. The cause of such probably arose from outstanding debts of the old members, due payment the processing factory owed to the cooperative and loan used for farm adjustment according to GMP standard, etc. This problem in a way reflect to its member to whom sufficient support cannot be delivered from the cooperative like improvement of dairy farm, training, buying milking dairy cattle for its members and help from husbandry and veterinarian who would take care the milking dairy cattle.

Management: recently, it found that some plan and operation of medium dairy cooperative cannot be completely implemented due to several reasons, for example, the committee has no knowledge about dairy cooperative' service, unclear plan and official and some members do not give cooperation to the overall operation of the cooperative. The decision will only come out from the chairman and committee. Moreover it also found that remote cooperative encounter a problem of communication and cooperation with government officers and education institute in requesting for academic support and new way of dairy farming. The cooperative where has a machine to produce pasteurized milk and processed milk product does have an inefficient marketing techniques.

Group 3: representative from small dairy cooperatives

The participants who joined in focus group discussion and whose opinions were analyzed by a SWOT analysis technique are representatives from 5 small dairy cooperatives such as Hiripunchai Dairy Cooperative for 2 persons, Maeta

Dairy Cooperative for 2 persons and Long Dairy Cooperative Limited for 2 persons totaling 6 persons. The result can be summarized as the following:

Strength of a small dairy cooperative

Man: Members are harmonized and help each other. Most members participate in every process of management including join in an important activity provided by the cooperative. Most importantly, most members have high determination and are ready to receive dairy knowledge and cooperative's management from the government officers and education institutes.

Material: small dairy cooperative has sufficient equipments in storing raw milk and land owned by the cooperative which is eligible for further expansion without affecting to neighboring community.

Money: small dairy cooperative have sufficient circulating funds in month-to-month management due to little amount of raw milk produced per one day which benefits the cooperative's uncomplicated management process.

Management: small dairy cooperative has more flexible administration as a result of small number of members – they can work together to find out a solution in instance. Their operation is in a relative-like pattern – every member can participate in every process of operation and is able to express their opinion. This creates reliability and transparency within the organization as they can inspect each other all the times. Consequently, the dairy farming information can be thoroughly spread out to the members with at a speed.

Weakness of small dairy cooperatives

Man: its committee neither has relevant knowledge about management, nor determination in driving the cooperative to success because they come to take the position against their will. This size of cooperative still lacks of official and specialist to render service to the members – most of them official are wife and children of the members that is deficient to the management of the cooperative. There are less than 20 dairy cattle per one member. Another important problem lies in lack of knowledge and efficient operation of dairy farming including management knowledge.

Material: small dairy cooperative encounters many problems such as shortage of standardized tools and equipment in checking raw milk quality and in storing raw milk delivered from it increasing number of members in a day in the future. Moreover the equipments in possession have been used for long time and frequently broken.

Money: with limited numbers of members, the cooperative has enough funds in hands only for the normal operation of the cooperative on monthly basis. There is not enough funds to support development of the members and of raw milk storage center. In addition, the farmers also have to handle with outstanding debts like, debts from old members, debts arisen out of loan and due payment of animal feed, etc.

Management: small dairy cooperative does not have clear management structure since it has been carried on in a relative-like system – none of specific duty and responsibility is assigned to the specific committee or official. One member can occupy more than one position. They lack of consistent cooperation with government officers and education institute and the rules, regulation and agreements cannot be actually enforced with its members.

1.2. Opportunity and threat of dairy cooperatives in upper northern Thailand (external factor)

Opportunity of dairy cooperatives

For tendency of most dairy cooperative, they will have more members as a result that the government has recently announced to guarantee the price at factory of raw milk from 12.50 Baht to 16.50 Baht per on kilogram. This will make a great contribution to the farmer who wants to do independent occupation to decide to do dairy farming because this occupation offering financial secureness is able to make money every day. The importance is that the raw milk is an agricultural product whose price is guaranteed by the government different from other agricultural products. And the dairy farmers tends to expand their farm by using their own milking dairy cattle or buy more milking dairy cattle which will increase quantity of raw milk gained in a day respectively.

In addition, as a result that the government adds more milk drinking days from 230 days to 260 days a year and increase quantity of milk the 5 – 6 elementary students drink, the need of raw milk from the processing factory will be doubled time. For the cooperative where has a pasteurizing machine, they can have more channel to sell milk to school and can make more money in a way.

Both government and private organizations are ready to give support and deal with factors affecting development of dairy farming and dairy cooperatives to be more efficient to response to the prospective extensive market from Thailand to foreign countries especially, AFTA.

FTA would help the countries who has more competencies in dairy farming and milk processing than AFTA such as Laos, Burma, Malaysia and Vietnam, is able to expand their market and deliver milking dairy cattle to AFTA where there is continuously increasing demand for milk product.

Threat of dairy cooperatives

Adjustment of oil price contributes to higher production costs of dairy farming especially, animal feed and cooperative management costs. The transportation cost of raw milk is also skyrocketed.

FTA with leading industrial countries of the world like Australia, New Zealand and United States of America would make raw milk price that is produced in Thailand being outclassed – unable to compete with the exporting price. This probably attracts the processing factory to use the imported dairy products instead of using the domestic raw milk because they need to decrease the production cost of ready-to-drink milk and other dairy products. The FTA agreement will make the government to stop giving support to the farmers of dairy products as soon as it is effective.

The government cannot fully enforce the law regarding examination and control of using raw milk in producing a ready-to-drink milk of the processing factory in the country including tax measure that is not actually applicable in over importing of milk powder of the private company than that is designated in the quota.

Expansion of community at a speed directly that affects a dairy cooperative whose farm is located in the community area limits development competency because the cooperative has to comply with rules and regulations of local administrative organization particularly, in aspects of environment and community.

Consuming milk and other dairy products does not imprint in consumption behavior of Thai people as a result Thai people does not realize to its extensive benefit. In addition, campaign promoting people to drink more milk lacks of consistency especially, among the students.

2. Milk factory in upper northern Thailand

2.1. Strength and weakness of milk factory in upper northern Thailand (internal factors)

Group 4: representatives from milk factory

The participants who joined in focus group discussion and whose opinions were analyzed by a SWOT analysis technique are representatives from 2 milk factories such as Chiang Mai Fresh Milk Co., Ltd. for 8 persons and Gold Milk Co., Ltd. for 4 person totaling 12 persons. The result can be summarized as the following:

Strength of milk factories:

Man: the executive officers and committees have a good vision and are capable to manage as well as plan to develop the dairy farming for its members to be systematic and standardized. They also have a plan to make the factory acceptable from the consumers all the times. The officer is ready to support the plan and gives well cooperation in implementing the designated plan – they also have specific skill and knowledge. This will result in efficient operation of the factory. Most importantly, its members also cooperate with the plan of the company.

Material: they have a relevant machine in production and raw milk quality test that is qualified the standard. The production process of ready-to-drink milk is up-to-dated certified by Food and Drugs Committees, HACCP and GMP – this creates creditability to consumers. The machine checking and production line are under periodical examination. Their production capacity is able to bear on huge amount of raw milk and the factory is located near the farm of its members. They also

have good environmental management keeping the community away from possible affects.

Money: they have sufficient budget to improve the factory in many aspects regardless of keeping it up-to-dated or enhancing more production efficiency and improving its members to be equivalent to other countries by being funding from financial institutes.

Management: an obvious organizational structure by dividing duties and responsibilities to sections, conducting documentation that can be examined, determining a purchase price according to the quality of raw milk, managing the factory by considering environmental aspect and possible affect to the community are also clearly seen. They also have an efficient marketing system.

Weakness of milk factories:

Man: because of a great number of members in many areas, the milk factory does not have enough officers in providing services to its members in regard with passing on the dairy farming knowledge, controlling raw milk quality and taking care of dairy cattle's physical condition. Some of members do not have knowledge of how to produce a high quality of raw milk and do dairy farming with maximum efficiency.

Material: the milk factory cannot change the machine all time times and as the factory and raw milk storage center are located in a remote area, they frequently encounters a problem about public utilities such as electricity, water and transportation, etc. In addition, the factory does not have an electric generator so the storage equipment is often broken. For the factory that is located near a community, they cannot expand the factory and the raw milk storage factory is under qualified GMP standard of Livestock Department since it needs a lot of financial investment.

Money: lately, developing milk factory needs a huge investment, so the factory has outstanding debts. Additionally, the production costs keep rising affecting to the fund that should be distributed to its members in dairy farming.

Management: lack of promotion of dairy knowledge according to the right principal and lack of new dairy farming technology to its members affect

to the amount of raw milk received from the members in different area. The factory therefore cannot control the quality of raw milk. The members neither fully express their opinion nor suggestion to the entrepreneur. They are completely lost in participation. The purchase price determination from its members is under sole discretion of the factory. Cooperation with government officers and education institute somehow has a problem and transportation cost is getting higher and higher especially when distributing the milk to schools in a remote area.

2.2. Opportunity and threat of milk factory in upper northern Thailand (external factors)

Opportunity of milk factories

Due to a company who produces ready-to-drink milk as a supplement delivered to schools for long time will purchase raw milk from the dairy cooperatives and farmers in upper northern who are the member of their company, the brand will be widely known and acceptable for consumers in such area.

In addition, as a result that the government adds more milk drinking days from 230 days to 260 days a year for pre-school children up to elementary students level 4 and increase quantity of milk the 5 – 6 elementary students drink, and cancel zoning system in selling milk, the company have tendency to sell more milk.

Financial institute gives more financial support to the company; they have sufficient circulating funds in operating.

As Thailand has entered into FTA joining with other AFTA countries, the opportunity is wide opened in expanding the market and milking dairy cattle to neighboring countries especially, Vietnam where has high progress of development and high export value.

Threat of milk factories

Annulment of zoning system from the government creates independent competition in the school milk market especially, the price. Whereas the small company has to compete with the big company who can keep the production cost lower to the ground, the small company loses its old customers.

World's oil price adjustment affects to the company directly who has to bear the burden in transportation of either raw milk or other dairy products particularly, the raw milk storage center that is far away from the milk factory and remote disposing areas.

FTA Thailand has joint with Australian and New Zealand makes consumers turning to drink more imported milk due to the lower price than that is produced in domestic including the creditable image of the imported products that has higher standard than the standard of product produced in the country.

The government ignores to make substantial campaign and public relation to promote Thai people to drink more milk. Recently, the government will do campaign only when the problem of excessive milk occurs.

Dramatic expansion of the community has caused affect to its members in expanding the farm and to the milk factory in the foreseeable future because now the environment issue is getting more important and becoming more public concern.

Consuming milk and dairy-related products is not culture of Thai people since they do not realize to its great benefit received from drinking milk. In addition, the campaign lacks of consistency especially, with the group of student to know about the benefit of milk.

Focus group discussion by using SWOT analysis techniques to compare strength, weakness, opportunity and threat of the dairy cooperatives and milk factories in upper northern Thailand can be summarized by below table:

Table 4.76 Comparison of strength, weakness, opportunity and threat of dairy cooperative of upper northern Thailand.

Analysis of internal factor (SWOT Analysis)		Large dairy cooperative (more than 60 members)	Medium dairy cooperative (20 – 60 members)	Small dairy cooperative (less than 20 members)
Strengths	Man	1. Committees are potential persons, sacrificed and determined to the managerial tasks to achieve the goal. 2. Their educational qualification is corresponding with the position and they have specific knowledge. 3. Members give well cooperation to the cooperatives	1. Committees are potential persons, sacrificed and determined to the managerial tasks to achieve the goal. 2. Their educational qualification is corresponding with the position and they have specific knowledge. 3. Members give well cooperation to the cooperatives	1. Members love and care each other and are harmonized. They cooperate with the operation of the cooperatives 2. Most members want to be passed on dairy farming knowledge and technology
	Material	1. They have standard equipments in checking raw milk quality and storing raw milk – is capable of bearing the amount of raw milk from the members. 2. Raw milk storage center is qualified for GMP standard.	1. They have standard equipments in checking raw milk quality and storing raw milk – is capable of bearing the amount of raw milk from the members. 2. Some cooperatives have machines in making pasteurized milk, ice cream and milking yogurt.	1. They have equipment in storing raw milk from its members. 2. Cooperatives can be improved and expanded a place to collect the raw milk without affecting environment and having any problem with a community.
	Money	1. They have sufficient fund to develop the cooperatives and dairy farming of its members.	1. They have sufficient fund enough for normal operation of the dairy cooperatives.	1. They have sufficient fund enough for normal operation of the dairy cooperatives.
	Management	1. Precise management structure. 2. The cooperative can operate many side businesses responding to its members. 3. There is regular training. 4. There is a use of good information technology system.	1. Precise management structure. 2. There provided loan and production materials to its members. 3. There is regular training. 4. There is a use of good information technology system.	1. Uncomplicated management structure is easy for decision. 2. Transparent management 3. Every member can fully take part in administrating the cooperatives.

Table 4.76 Comparison of strength, weakness, opportunity and threat of dairy cooperative of upper northern Thailand (continue)

Analysis of Internal factor (SWOT Analysis)		Large dairy cooperative (more than 60 members)	Medium dairy cooperative (20 – 60 members)	Small dairy cooperative (less than 20 members)
Weaknesses	Man	1. Most of committees have no managerial knowledge. 2. Some have disputes among its members. 3. Lack of specialists 4. Member lacks of dairy knowledge and principle of the cooperative.	1. Most of committees have no managerial knowledge. 2. Lack of sufficient officials to render service to its members throughout the responsible area. 3. Some members have no interest in operation of the cooperative. 4. Member lacks of dairy knowledge and principle of the cooperative.	1. Member lacks of dairy knowledge and principle of the cooperative. 2. Lack of official who give dairy knowledge and take care of dairy cattle's physical condition. 3. Many of them have small farms and do not know how to do right way of dairy farming.
	Material	1. Some cooperatives do not own the land – the improvement is very limited. 2. Short of equipment in checking quality of raw milk	1. A raw milk storage center is not qualified GMP standard (lack of tools and equipments) 2. Milk processing machine cannot support the whole amount of raw milk.	1. Lack of standard equipment in checking quality of raw milk and collect the raw milk. 2. Equipment has been being used for long time – frequently broken.
	Money	1. Management costs keep rising especially, transportation cost 2. Lots of debts	1. Lack of supporting fund to its members 2. Lots of debts	1. Lack of supporting fund to its members and to improve a raw milk storage center to be equivalent to required standard.
	Management	1. Complicated management structure causes delayed decision. 2. Former committees who occupy the position for quite sometimes 3. No actual participation from its members	1. Imprecise place, responsible officers and project evaluation 2. No one wants to take the administrative position. 3. Inefficient marketing plan of raw milk distribution	1. Uncertain management structure 2. Day to day management 3. Committees do not give importance to administrate the cooperative.

Table 4.76 Comparison of strength, weakness, opportunity and threat of dairy cooperative of upper northern Thailand (continue)

Analysis of external factors (SWOT Analysis)	Large dairy cooperative (more than 60 members)	Medium dairy cooperative (20 – 60 members)	Small dairy cooperative (less than 20 members)
Opportunities	1. There is tendency of increasing amount of members from the raw milk's price adjustment at the processing factory. 2. Most of members plan to expand their farms. 3. Need of raw milk from the processing factory is increasing since the government adds more milk drinking days and promote students in many levels to drink milk. 4. Because the cooperative has machine to produce pasteurized milk, they have more channels to sell school milk. 5. Dairy-related organization gives well support. 6. From the agreement of FTA Thailand has made with AFTA countries, this helps widen opportunity to export dairy products and milking dairy cattle to Asian countries where there is high demand of milk consumption.		
Threats	1. The world's oil price adjustment causes higher production costs to dairy farmers and the cooperatives. 2. FTA made between Thailand and the world leading industrial countries such as United States of America, Australia and New Zealand contributes the entrepreneur to use more milk powder instead of domestic raw milk due to lower production costs. 3. Government authorities is unable to enforce the law in checking raw milk quality and control the use of raw milk in producing ready-to-drink milk including tax measure that is not actually applicable in over importing of milk powder of the private company than that is designated in the quota. 4. Dramatic expansion of community creates controversies between the cooperative and community regarding pollution. 5. Consuming milk and dairy products is not yet imprinted into Thai consumption culture.		

Table 4.77 Comparison of strength, weakness, opportunity and threat of milk factories in upper northern Thailand

Analysis of Internal factors (SWOT Analysis)		Milk factories
Strengths	Man	1. An executive officer and committee have good vision and potential in planning for its members to improve their farm as well as improve the milk processing factory to be standardized admissible for consumers in upper northern Thailand 2. Officers have skills and specific knowledge. 3. Officers are ready to implement the plan and give well cooperation. 4. Members cooperate to operation of the processing factories.
	Material	1. Having fashionable equipment can deliberately check the quality of raw milk 2. Having fashionable production machine to support a great amount of raw milk. 3. There is periodical examination of tools, equipments and machines. 4. There are raw milk storage center throughout the responsible area.
	Money	1. Sufficient funds in improving dairy farming for its members, raw milk storage centers, and processing factories 2. Financial institutes give support to the processing factory. 3. Enough fund to help its members such as money loan, loans for animal feed and medicine etc.
	Management	1. Precise management structure 2. Duties and responsibilities are obviously organized. 3. Verifiable documentation system 4. Price determination of raw milk according to the quality 5. Good environmental management causes no impact to the community.

Table 4.77 Comparison of strength, weakness, opportunity and threat of milk factories in upper northern Thailand (continue)

Analysis of internal factors (SWOT Analysis)		Milk factories
Weaknesses	Man	1. Insufficient officers for the tasks especially, dairy farming promotion. 2. Most members have no knowledge how to make good quality of raw milk and the farming is inefficient.
	Material	1. The cooperative cannot catch up with the frequent change machine all the times. 2. Processing factories and raw milk storage centers have problems about public utilities such as electricity, water and transportation. 3. Processing factories is located near community area – unable to be expanded. 4. Some raw milk storage center of the processing factory is not qualified GMP standard.
	Money	1. The processing factories have a lot of debts. 2. Financial support cannot be made to all members. 3. Increasing management costs need more circulating funds.
	Management	1. Passing on dairy knowledge to its members lacks of consistency. 2. Member cannot fully express their opinion to the processing factory. 3. Determination of purchase price of raw milk is solely under discretion of the processing factory. 4. Service provided by the officer especially, medical care to milking dairy cattle cannot be done in all areas. 5. Cooperation between the processing factory and government officers and education institute sometimes has a gap and problem. 6. Different quality of raw milk from its members causes difficulty in controlling its quality at the processing factory. 7. Transportation of ready-to-drink milk to a remote area somehow has a problem and costs more production costs.

Table 4.77 Comparison of strength, weakness, opportunity and threat of milk factories in upper northern Thailand (continue)

Analysis of external factors (SWOT Analysis)	Milk factories
Opportunities	1. Increasing numbers of members is a result from the purchase price adjustment of raw milk at the factory by the government. 2. Company received more financial support from a financial institute. 3. Dairy products of the company are getting well known and acceptable – more people will drink more milk. 4. Government's policy changes to add more milk drinking days from 230 days to 260 days and increase amount or milk the elementary students level 5 - 6 drink in a day – school milk tends to be sold more and more. 5. The company expands market of school milk to other areas as a result of annulations of zoning system. 6. The company has a chance to expand the market to neighboring countries as a result of FTA made with AFTA countries.
Threats	1. As the government cancels a zoning system in selling school milk, there constitutes an independent competition to such. The small company who cannot compete with the large volume company has to lose old customers. 2. As the world's oil price keeps rising, the company has to carry weighty burden of production costs. 3. FTA makes the imported dairy product cheaper than that is produce in the country. 4. Campaign promoting Thai people to drink more milk lacks of consistency. 5. Dramatic expansion of community causes disputes between the processing factory and the community. 6. Consuming milk and dairy products are not culture of Thai people.

Section 4.2.2: Dairy cooperative's management process in considering to representative of dairy farmers who concerning promotion of dairy farming in Upper Northern Thailand.

This quantitative research is focused onto 4 major points of management process of dairy cooperatives such as planning, organizing, directing and controlling. It also includes obstacles and suggestions in dairy farming development of the farmers and management process of dairy cooperation to be more efficient by using in-depth interview with concerned parties relating with promotion of dairy farming in upper northern Thailand. The concerned parties consisted of 3 groups as the following:

1) Persons who have duties and responsibilities in laying out the plan and policy in connection with management process of dairy farming in upper northern Thailand such as president of 18 dairy cooperatives or its committees located in upper northern Thailand totaling 18 persons.

2) Person who have duties and responsibilities in promoting dairy farming extension in upper northern Thailand such as 5 provincial livestock officers and 1 expert from the Department of Livestock Development totaling 6 person.

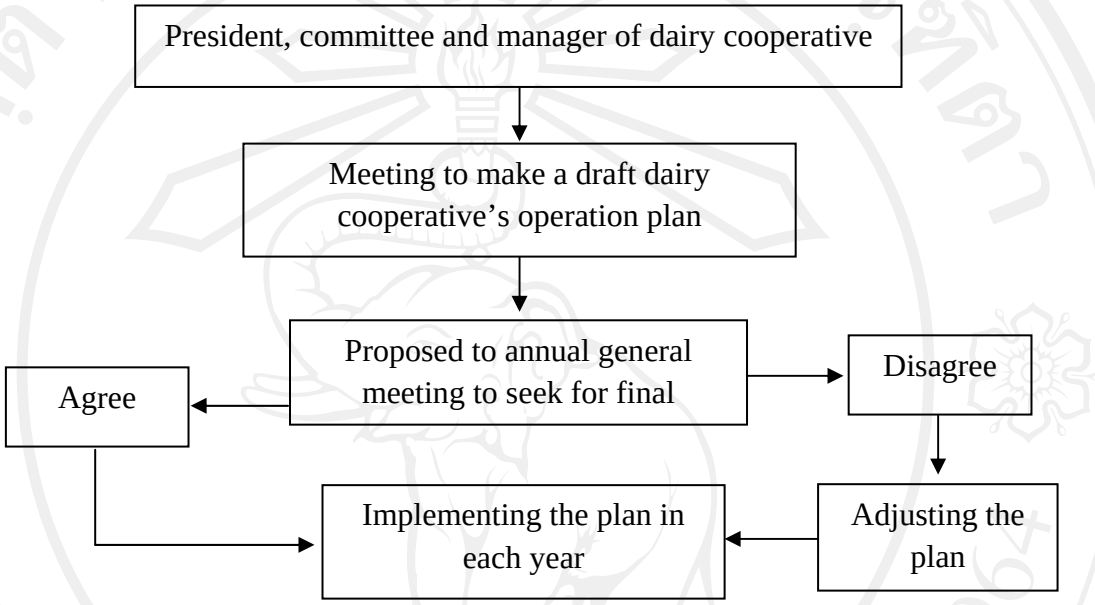
3) Persons who have duties and responsibilities in determining plan and policy in producing ready-to-drink milk of the processing factory in upper northern Thailand such as representatives from Chiang Mai Fresh Milk Co., Ltd., Gold Milk Co., Ltd. and U.M. Pokkaphan Co., Ltd. who are ready to participate totaling 3 persons.

Group 1: Persons who have duties and responsibilities in laying out the plan and policy in connection with management process of dairy farming in upper northern Thailand such as president of 18 dairy cooperatives or its committees located in upper northern region were interviewed in-depth about management process in the 4 major aspects: planning, organizing, directing and controlling. They also give opinion and suggestion in developing dairy farming of farmers and management process of dairy cooperatives.

For the result of an in-depth interview about management process of the cooperatives with the chairmen or committees of 18 dairy cooperatives can be concluded within the following 4 aspects:

1. Planning

The cooperative usually conducts an annual plan in a meeting of its president and committees before proposing it to the annual general meeting to find a final resolution from the chairmen and committee. (Figure 4.2)



Source: In-depth interview of president or committees of large and medium sized dairy cooperatives in 2009.

Figure 4.2 Process of planning of large and medium dairy cooperatives

In assigning duties and responsibilities to each committee which is mostly made by a president of the cooperatives, the suitability and qualification of each committee will be taken into consideration. From the interview, it found that during the planning process, it has interesting problems and obstacles which can be summarized as the follows:

1. Most of committees have no relevant knowledge and understanding in managing the dairy cooperative because some of them are old and graduated only in the level of a junior secondary school – they do not prior have direct experience in managing dairy cooperative. The planning is mainly from a person who is on the top of the organizational chart especially in the small and medium sized dairy cooperatives.

2. Some committees do not understand their role for the position they occupy. One reason is caused from nomination and election against their willingness. It reflects to the work performance that they are not fully determined and participating in management process. Most important problem is that the committees do not give importance to the duties and responsibilities for which they are assigned – they have an idea that the management task is the responsibility of the president and official of the cooperative only.

3. Large and medium dairy cooperatives are mostly assembled by the dairy farmers in each area; each group will select one among them as a leader who shall act as the cooperative's committee so numbers of committees are depended on the numbers of members in each group. According to this, planning will aim to subserve benefit of theirown group. This problem also encourages its members to seclude from the main dairy cooperative to set up a minor group because they want to grow up and own the business - none of bigger assembly of the dairy cooperative is substantially promoted.

4. The annual planning still lacks of participation from its members. Most of the plans are the decision of the president, committee and manager of the dairy cooperatives. The members have a duty to vote in an annual general meeting only. This information is identical to the information obtained from focus group discussion that members seem to ignore the details of the annual planning of the cooperatives. They will put his vote to the majority side and they think that if the president and committee consider that it is a good plan, they will obey and trust them. A consequent problem is that the members will cooperate during an early stage of plan implementation afterward they will lose their interest in this operation because such projected plan does not actually come from their intention. The annual plan does not seem to be successful as firstly expected.

5. Some committees do not quite have courage to speak out their opinion because they think they are overshadowed by the government authority as reflected by focus group discussion which is found that one committee of the cooperative stated that "**an officer always comments that this can be done and this cannot be done.**" The committee does not dare to make a decision in planning process because they are afraid of violating government's regulation. Therefore

planning of the cooperative in each year will come out the same direction but it is different in budget allocation. The committee is not encouraged to have a creative thinking or present new idea in developing the cooperative.

6. Lacking of using reliable sources of information in making a decision – they use only information from the inside – cause problems every year.

7. Planning of the cooperative is about a year-to-year basis. Neither medium-term planning nor long-term planning is actually implemented. Some critical matters lack of consistency especially, enhancing efficiency of milking dairy cattle and decreasing raw milk production costs this need to be continuously done in a long term in order to achieve the success. Moreover the plan is not identified precise and corresponding goal and objective in operation.

8. No clarity is made as the plan contains no concrete procedures such as what, how, who, where and when. And there is no follow-up and evaluation of operation of the dairy cooperative, thus some plan is not successful as expected.

The researcher places importance to planning that concerned party gives well participation especially, every member of the dairy cooperative. This is important and necessary matter in developing the dairy cooperative because the members have an opportunity to take part in planning by expressing their own actual need. This will create acceptance and readiness in giving full cooperation.

2. Organizing

Large and medium dairy cooperative have management structure according to what Department of Cooperative Extension has determined. That is to say, committees must consist of at least 12 elected persons on 4 year term each time (2 times at maximum) and must leave the position for one year if being elected in the next consecutive time. The cooperative must be separated into division to make the management more efficient. This can be summarized as follows:

2.1. Duties and responsibilities of committees of the dairy cooperative

Committees are from election by its members and entitled to administrate the cooperative on behalf of the members. They are assigned to the following task:

2.1.1 A president is entitled to take charge and control overall operation of the dairy cooperative to be the good manner and in the line of the cooperative's objectives. In addition, they have to proceed any other affairs as the committee assign according to the law, regulation, rule, resolution and order of the cooperative.

2.1.2 A vice president is entitled to act in lieu of the chairman in a case that the chairman is absent or incapable of doing the duty or when the chairman position is unoccupied. They also have to proceed any other affairs as instructed by the chairman.

2.1.3 A secretary is entitled to conduct a minute every time of the committee meeting or annual general meeting as well as being responsible for documentation to be in safe and sound manner.

2.1.4 A treasurer is entitled to take care, inspect and be responsible for financial matters and assets of the cooperation according to the righteous principle.

2.1.5 A committee is entitled to consider any matters in regard with the operation of the cooperative such as controlling and supervising members to obey the law, regulation, rules, resolution and order of the cooperative; taking care of products of its members; providing production material to its members; taking care of production, depositing loaning and investing systems. In a case that any committee who disobey or perform the duty with negligence leading to the following damages to cooperative of other members; financial, accounting or financial status according to the auditor report or any report must be responsible for such action.

In accordance with a recent operation, the research found that even the most dairy cooperatives have determined duties and responsibilities of committees, most of them do not understand their role of what and how. They know only that they have to attend monthly meeting to be advised of general operation. On the other hand, unclear roles of each committee and lack of estimation of committee's ability area also considered as another cause of problem.

2.2. Duties and responsibilities of inspectors of the dairy cooperative

An inspector shall have the member or outsider appointed in the general meeting. The appointed person must have ability in the following aspects:

business, finance, account, economics or cooperative. There will be 5 people at maximum, as they are entitled to inspect overall operation of the cooperative such as documentation, accounting, record, finance as well as all assets in possession and remaining debts to seek for existing fact. The inspector also has to check for the transparency of every business of the cooperative, and follow up with the operation of the committees to improve plan, regulation, resolution and order of the cooperative that will cause utmost benefit to its business. A monthly report must be presented to the committees and an annual report must be presented to the committee in an annual general meeting. In any case of an urgent defect, the written notice must be made to the committees immediately by suggesting a solution. If the inspector fails to inform the committees about such defect for immediate response, he/she shall be liable for incurred damage.

2.3. Duties and responsibilities of officers of the dairy cooperative

The numbers of officers depends of the size of ongoing business. From the interview, it found that large and medium sized dairy cooperative divides the duties and responsibilities as follows:

2.3.1. A manager is entitled to take charge, control and inspect overall performance of other officers to be the good manner and carry out the assigned tasks. They have to report the result of operation to the committee each month.

From the recent operation of the dairy cooperative, the researcher found that large and medium dairy cooperatives has no manager as a result they used to encounter with nontransparent performance of the manager especially, finance. One president commented that "**most of potential and smart manager are dishonest**." One cause of this problem is that the committee is too trustful and appoints the manager to over control the cooperative and make a decision on their behalf. The most important issue is that the committee does not take serious role in supervising and inspecting the operation of the manager continuously. They fully empower the manager to make a decision.

2.3.2. An assistant manager is entitled to comply with the order of committees and to supervise the performance of officers as well as to report monthly working performance to the committee. In a case the manager is absent or is

unable to perform a regular duty or when the position is unoccupied, the assistant manager has to take control.

From the in-depth interview, the researcher found that some large and medium dairy cooperatives have only an assistant manager but no manager. The assistant manager will act in place of the manager since an assistant manager has a long period of work in the cooperative – they have well and proper knowledge and understanding in management of the cooperative. The problem found is that an assistant manager of the cooperative has to be responsible for various works at the same time so they are unable to run the cooperative at their maximum ability. Sometimes the committees interferes other committee and manager's duties.

2.3.3. Other officers of each cooperative are entitled to different tasks depending of the size of the dairy cooperative. For example, the large and medium dairy cooperative will have loan, financial and marketing officers, officers working in a raw milk collecting center, officer promoting dairy farming and cleaning officers.

From the recent operation, the researcher found that nature of work assigned to some officers is not clear, that is to say, some tasks overlap other tasks. The officer does not realize their own role causing confusion in operation and a problem of ending the accounting year. In addition, it also found that some officers have unresponsive educational qualification to their duty – this problem may be arisen out from the tradition that the committee takes their own kin to work in the cooperative without being fairly elected. The operation of the dairy cooperative is not as efficient as firstly expected.

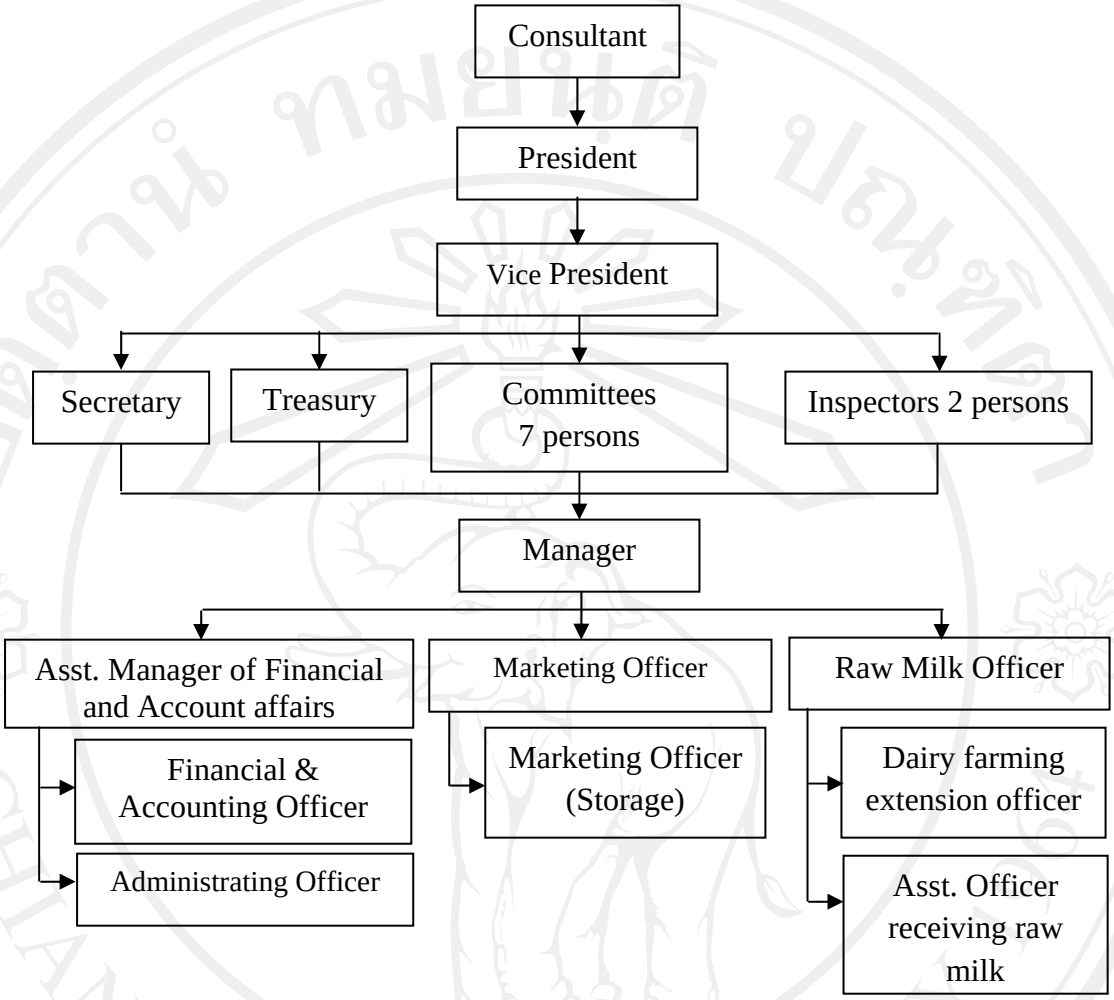
Moreover most of the dairy cooperatives do not have a precise standard in evaluating the result of an operation – officer's lack of motivation in working for the cooperative. System of personnel development also needs to be promoted – the development is made by training from government authorities and always attended by the committees. The knowledge gained from such training is not passed onto its operative officers. This problem is found in medium and small sized dairy cooperatives whose budget is not enough for such development and whose officer is limited both in number and knowledge.

2.4. For the task division, each member of the dairy cooperative is entitled to comply with rules, regulations, resolution and order of the cooperative, to support activities of the cooperative, to surveillance activities of the cooperative and to give cooperation with the committees for the prosperity of the cooperative.

From the in-depth interview, it found that some members disobey regulations and rules of the cooperative. To illustrate, they do not attend in the meeting, participate in the activity arranged by the dairy cooperative and cut through a cooperative to sell raw milk to a middleman. It reflects that some of them do not understand their role of being membership and actual objectives in establishing the cooperative – all of these problems surely affect to the management process of the dairy cooperative.

As the dairy cooperative wants to have an organizational structure according to the regulation of Cooperative Promotion Department, it creates a hierarchy kind of management by decentralizing power at the committee and general meeting. Therefore, since the process of making decision has to undergo too many processes, it cannot catch up with changing situation. Besides, rules and regulations have been using for quite sometimes and referring to the government's regulations infeasibility in management is also found distinctive. (Figure 4.3)

For the dairy cooperative who owns a machine producing pasteurized milk, they have a marketing problem so that they cannot fully expand the market of ready-to-drink milk.



Source: In-depth interview conducted with a manager of Lamphun Dairy Cooperative Ltd. (Large dairy cooperative) in 2009.

Figure 4.3 Example of organizational structure of large and medium dairy cooperatives.

For the small dairy cooperative, in accordance with regulations of Cooperative Promotion Department, the researcher found that it has unorganized management structure due to limited number of its members. The task division and separation is considerably different from the large and small dairy cooperative. The small one will have only an administrating officer and an officer receiving raw milk. Such limitation still affects to failure of enforcement of rules and regulation the members ought to comply with. The operation of the small dairy cooperative is on day-to-day basis – the members merely expect a processing factory to purchase their raw milk every day while the cooperative will serve as a raw milk collecting center and financial

caretaker for its members. So most of members do not have a sense of ownership of the cooperative (Figure 4.4)

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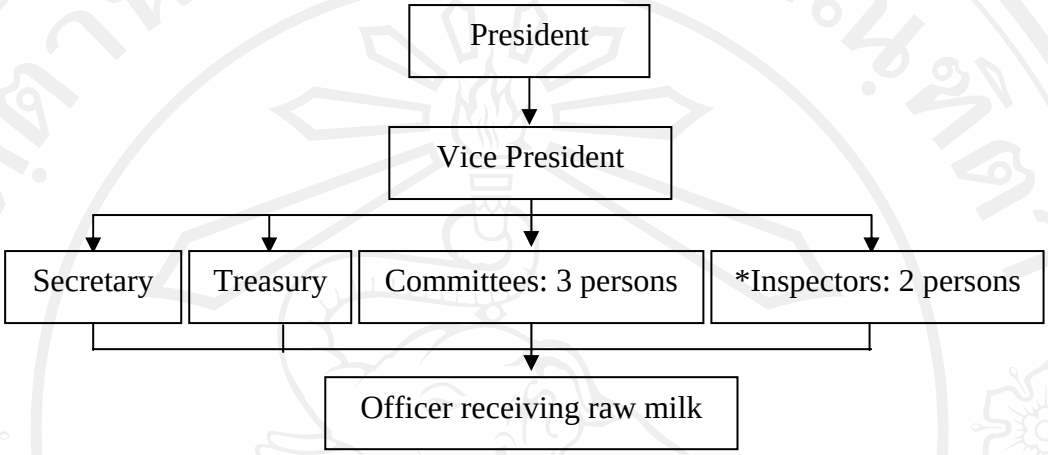

Source: In-depth interview conducted with a chairman of Phrae Dairy Cooperative (small dairy cooperative) in 2009

Figure 4.4 Example of organizational structure of a small dairy cooperative

Remark: *consisted of a president and academic expert from Phrae Cooperative Promotion Department.

3. Directing

A pattern of directing will be the responsibility of the committees that will make a decision under rules and regulations of the dairy cooperative in order to carrying out its objectives. Form the interview of large and medium dairy cooperatives, power is separated into 2 parts as follows:

3.1. Power directed by the committees of the cooperative, that is to say, the committees are entitled to a direct authority such as issuing rules and regulations of the dairy cooperative for its members' compliance, considering and making decision towards the operation of the cooperative particularly in budget consideration or an annual investment that need substantial money, and determining the direction of the cooperative in each year. But in the past, most of its operation comes out of its chairman who takes a role to direct because the committees did not take part in administrative tasks which is mostly a responsibility of its officers. Additionally, it also found that some orders made by the president and committees were not officially

recorded in a precise written mean but made though an oral communication – some of them order was ignored and disobeyed.

3.2. Power directed by the manager or assistant manager of the cooperative, that is to say, the manager is entitled to direct the cooperative's officers to work in each division in propitious manner. They also have an authority to make a decision to solve a problem for the cooperative. But in a case that the problem is beyond their ability to solve, the manager must report to the committee to find the best solution immediately. As they have to wait for an action and decision taken by the committees which takes too long time, the remedy cannot be easily achieved.

A top-down directing of the dairy cooperative makes the subordinates feels opposed against and uncooperative in complying with the order particularly, when the order came down from the committees or manager who rather rely on their emotion that reason without thorough consideration. This reflects that the leader still lacks of good leadership – a major obstacle in developing the cooperative. In some case, the order is inconcrete; it is just an oral command which will be latterly ignored. This case always happens in a small-sized diary cooperative in which the decision of the committees and manager is advised by the government authority. They are afraid of violating the government's rules and regulations.

Besides, it also found that there are no consistent follow-up and evaluation procedures after the order has been made. This will result in suspension of the plan of the cooperative which cost a lot of money by gaining nothing in return.

4. Controlling

Controlling of operations of the dairy cooperative is deemed important for a management process to be in accordance with the laid plan; therefore there must be criteria to assess its result about what procedure should be assessed by what criteria and how it must be assessed. The controlling process is consisted of the following:

1. Determining work standard
2. Examining and assessing improvement in results
3. Analyzing and evaluating work performance
4. Improving and fixing mistakes or defects to achieve the goals

From the interview, it found that all three sized dairy cooperative has no concrete controlling system. For examples, there designated no standard of work, no auditing system, no assessment of improvement in results and no analysis and evaluation of the work performance. In general, the president shall appoint the committees to take control of each major task and report back the result of the operation every month. Thus most of controlling roles are depended on the president. It found from the interview that the problem arises out from the president who does not give importance to the controlling of the cooperative because they think that doing so will be like catching up the subordinate's faults and this will lead to dispute and resentment within the cooperative. The subordinates ignore the rules and regulations of the cooperative.

Most of the cooperative's member still has less participation in managerial task with the committees and officers because of the two major factors; members are too trustful to the committee and member to run the cooperative; and members are lost in communication with the cooperative. They cannot receive information regarding the result of the operation from the cooperative and they have to carry leaden burden of debts primarily caused by murky proceedings of the committees, manager and former officers. Moreover the dairy cooperative has no efficient information storage system so the information cannot be dig up to use in examination of tracing back when a problem occurs.

From the in-depth interview, it found that the inspector of the cooperative's operation is the same person who inspects all dairy cooperative's business – they cannot make an inspection perfectly and thoroughly because of the three major factors: Thai culture that gives respect to senior, cronyism and feeling of obligation that obstruct the efficient inspection. Besides they also avoid creating resentment within the cooperative including bad image of the cooperative to the view of outsider which directly extremely decreases reliability of the cooperative. Such problem is a big barrier stopping the cooperative from working efficiently.

For the necessity in developing the dairy farming and management process of the dairy cooperative in the viewpoint of interviewees, it found that they need support from related government authority and private organizations that relate

to dairy business especially, the small cooperative that needs a dramatic help. The needs can be concluded as the following:

1. Providing an absolute source of purchasing raw milk

In each year the cooperative will conduct a memorandum of understanding (MOU) between the dairy cooperative and a milk factory under the following terms; determining a purchase price of raw milk according to its quality; determining amount of raw milk the cooperative needs to supply the processing in a day; and controlling quality of raw milk during transportation period. Recently, it found that during the committed period of MOU, the cooperative wanted to make a new agreement with the new processing factory as a result that the processing factory delays in payment of raw milk, they forces the price down as they make a frequent excuse of the raw milk quality, and sometimes during the end of academic semester they limits the amount of raw milk supplied by the cooperative. From the interview, it found that the president and committee suggested that **"even if we send raw milk to a remote factory which unavoidably causes more transportation costs, while the factory has no financial problem – they pay on time, we are willing to do it."** Besides, it also found that the amount of raw milk produced in a day tends to be mounted up because the farmers expand their own farm by feeding more milking dairy cattle. The factory cannot bear on the entire increasing raw milk. Participation from the government authority is deemed highly necessary in providing more sources that will purchase the raw milk in each year which has to be corresponding with the amount of raw milk produced in each day. Most importantly, the government authority should join in as a middleman in solving problems between dairy cooperatives and processing factories such as raw milk price suppression, delay in payment and denial to purchase raw milk.

2. Support circulating fund to the dairy cooperatives

Medium and small dairy cooperatives are frequently short of circulating fund. The causes of problem may come from; a small number of members that affect to less circulating fund; a lot of outstanding debts incurred from initial investment in the cooperative's building; outstanding debts from the defunct processing factory; and former members do not continuously pay the debts. The cooperative has to bear on a lot of debts that annual income is used in liquidating the

outstanding debts and that affects to the decreasing circulating fund they have in hands. This problem affects to the development of medium and small sized cooperative either in farming and management. Therefore they need financial support from the government to maintain their normal operation.

3. Animal feed price and quality control

Increasing animal feed during the past few years has great influence to the cooperative's members since it also increase a production cost and reduce the net income received from selling raw milk especially, the members who do a small dairy farming. The mentioned problem also affects to members who do not own a land for growing an animal feed and rely on external factor whose price keeps going up as days go by. It is necessary for the government to take control of the price limit and quality of an animal feed to be suitable with the actual production costs in order to avoid taking advantages from the dairy cooperative by the animal feed factory.

4. Change falls upon school milk zoning by the government (interview made during May 2009 – October 2009)

From the resolution of the cabinet dated March 10, 2009 to cancel milk zoning system in selling milk to schools, it is more favorable to the processing factory with massive production capability and more competitive production cost than that of the small local one in upper northern region. Some small factories lose its milk distributing area to the big factory. The need of raw milk from the local processing factory is also decreased. The following consequent is that the factory tries to lower the price of raw milk to lower its own production costs and to be more competitive with the big factory. From the interview of the chairman of one dairy cooperative, it found that the dairy cooperative has already made a memorandum of understanding with one processing factory, and when the government cancel the milk zoning, the factory lose its customers to the new bigger factory. With this reason, the factory denies to purchase raw milk from the cooperative. The chairman and committee of the dairy cooperative file a complaint to a Chiang Mai Governor asking for help. The president of such cooperative commented that **"if the factory does not purchase our milk, we do not know where to sell it. The cooperative will have more debts. Eventually, some might have to**

close down the business. This causes by the cancellation of milk zoning." Such statement reflects to an actual impact from the cancellation of milk zoning which happens to the milk factory, dairy cooperative and dairy farmers in upper northern region.

5. Consistently academic support

During the past time, it found that the government authority and education institute have been aiming to provide knowledge concerning dairy farming to the members of large and medium dairy cooperatives since they are well known among ordinary people and located near such organization. Some medium and small dairy cooperatives whose locations are far away from such organization cannot access such academic knowledge. From the interview, it also found that many research did not well response to the actual need of the dairy cooperative's members most of them cannot apply the knowledge gained to the real activities. Now they do not participate in researches from the government. This information is identical to what the researcher got from the interview of one chairman of the dairy cooperative regarding a problem of participation with the government's research which stated that **"in the past there are many organizations come to do research but the cooperative hardly receive its result to apply for their utmost benefit."** This reflects us that there lied a problem in passing on the knowledge gained from the research to the local researcher of the dairy cooperative. Moreover inconsistency of research serves as another major threat affecting to participation of its members. On the other hand, when the researcher has done their job, they do not follow up and evaluate consistently and the participating members had an idea that it was just an experimental research. Therefore in a situation that no follow-up or evaluation was continuously contributed, the members lost their intention to such researched operation. The interviewees especially, members, diary cooperative's officials and committees, want dairy and managerial knowledge support from the government and education institute on consecutive basis. Most of all, the remote dairy cooperative is in the real need of this support to improve their farming to be more efficient.

6. Support of technology aiding management process of the dairy cooperative

From the interview, it found that some large dairy cooperative bring technology in administrating the cooperative especially accounting system which was provided by the Cooperative Auditing Department such as inventory management software, member, stock and loan system, and deposit system, etc. The medium and small sized dairy cooperative needs support of these mentioned systems to help the management to be more efficient, as such technology has to be suitable to the size of the dairy cooperative. Bringing this technology to be used in actual operation will somehow help solving management system especially the accounting system that frequently has a problem of unclosed annual account. The skill enhancement to the members is to be done to improve the cooperative in the future.

7. Campaign and promotion to turn the consumers to drink more milk and expand the market to dairy industries of Thailand

From in-depth interview, it found that most of interviewees want the government to take an action in campaign and promotion to turn consumers to drink more milk. The government needs to determine a national agenda regarding health promotion of domestic people by drinking ready-to-drink milk that is produced by 100% raw milk from the domestic farmers. Recently, it is noticeable that the government has launched a campaign only when the dairy farmers encounter a problem of oversupplied milk. Such campaign only mitigates and solves a problem at hands only but in reality, it has to be carried through continuously. Besides, the farmers suggested that they want the government to seek out a profit from the FTA agreement especially AFTA in expanding more distribution channel and dairy-related products that are more potential than that of the other ASEAN countries such as Burma, Laos, Malaysia, Indonesia, etc.

Group 2: persons who are entitled to or related to promotion of dairy farming in upper northern region such as an official of the Provincial Livestock Department whose responsibility is laid in the 5 upper northern provinces: Chiang Mai, Chiang Rai, Lamphun, Lampang and Phrae, and an expert in the Livestock Promotion Department for the sum of 6 persons. They were enquired about their opinion towards dairy farming of the farmers and management process of the dairy cooperative in upper northern Thailand.

From the in-depth interview, the researcher found that over the late 30 years of dairy farming promotion in the upper northern Thailand, the Livestock Department plays an important role in providing promotion and support to the dairy farmer by aiming to a higher efficient production, less production costs, and acceptable production standard for both domestic and international consumers. The most importance is that the Thai dairy farmers must survive for doing this occupation in the future and it also reflects to the food security of Thailand.

Consequently, the interviewees indicated that dairy farming in the upper northern region is more advantageous than any other region in Thailand due to the appropriate landscape and climate that facilitates to this kind of farming. For example, the flat landscape is suitable for growing animal feed, waste from the food processing factory can be used as roughage to feed the dairy cattle, and cold weather is favorable for the dairy cattle, etc.

Even dairy farming in the upper northern region is more advantageous than other region in Thailand, it turns out that dairy farmers still face the various problems; there is not enough land for animal feed that they need to rely on external production material especially, the animal feed, which inseparably affects to the higher production costs; inefficient farm management causes a physical problems of the dairy cattle which latterly affects to the quality of raw milk; disunited dairy cooperative; including dramatic expansion of the community area. From the interview, it found that the interviewees pointed out the causes of problem that it arises out from the dairy farmers themselves. The problem can be divided into 2 groups as follows:

Group 1: Dairy farmers with progressive thought

This group of farmers is ready to accept changes. They learn and attempt to find new dairy farming knowledge from different media all the time like knowledge gained from participation of research with organizations, from training and observation field trip and printed media regarding dairy farming. They applied this knowledge to their own farm. So this group of farmer can produce good quality of raw milk and can lower the production cost, and most of them are successful in doing dairy farm. The Livestock Department selected them to be a role model for other

farmers in neighboring area to learn and bring back the knowledge to use with their own farms.

Group 2: Dairy farmers with underdeveloped thought

This group of farmers hardly accepts to the change and denies learning new things. They adhere to the old-style farming because they are afraid of possible impact to the productivity of raw milk whenever the change falls. They do not give cooperation with the government authority and dairy cooperative in arranged activities such as meeting, training and participation in research made in conform with other organization. They come up with an idea that doing such wastes their time and is unable to apply in actual situation. Moreover the only demand they pray for is the place to purchase their raw milk and facilitate them in financial mean.

Now the officials of the Provincial Livestock Department has decreased their roles and duties in promoting the dairy farming since the most farmers already have a good level of understanding and knowhow – they have full-packed experience, and in consisted of, the large and medium sized dairy cooperative already have in possession of the animal husbandry and veterinarian who are entitled to give advice, solve a dairy farming-related problem to its members, especially, taking care of the dairy cattle's physical condition. The officials of the Provincial Livestock Department will lend their hands and give support the dairy farmers upon their request only. But for the district insemination officer, they are very important to the dairy farmers especially, the small-sized dairy cooperative where give artificial insemination free service to the farmers – this is always deemed as one of the most important livestock service of Thailand for all these years. From the interview, it found that problems and obstacles in promoting dairy farming today of the officials of the Provincial Livestock Department can be concluded below:

1. Frequent change of the government policy

From the politic situation of Thailand that the cabinet has always been reshuffled all the times, the policy is also changed. This puts a break on ongoing operation or even renews the entire project – which causes a bad impact to the farmer since the implementing project lacks of consistency and eventually will not catch attention from the farmers to participate in.

2. Economics situation of Thailand

From the world crisis during the recent years, it affects Thailand's economics as well. The government needs to cut down the budget of each government section including the Livestock Department causing less operation budget in supporting the dairy farming in local area such as training, buying medicine for milking dairy cattle and operational budget of the officials. Therefore the operation of the officials from the Livestock Department will be in a kind of defensive strategy rather than offensive strategy.

3. Leaden burden of the officials

As a matter of fact that the officials have to be responsible for many project of the Livestock Department in the same time, they have less capability in promoting the dairy farming. From the interviews, it found that most of the officials give importance to an urgent project or the project that is in the best interest of the Livestock Department at the time. In addition, the annual plan of the officials is already determined from the central department in which is unable to be adjusted. Recently, it also discovered that the project cannot solve the problem or response to the actual need of the dairy farmers. The order making is in a top-down pattern that is the common pattern of Thai government section.

4. Unclear authority and duties of the officials

From the interview, it found that the provincial officials of the Livestock Department are ideally entitled to direct, supervise and control the processing factories to use raw milk from the dairy cooperative in producing school milk only in order to prevent it from the usage of low-quality raw milk and contaminated milk powder to reduce the production costs of school milk to be more competitive with other processing factories. In fact, the officials cannot make an inspection of the school milk production process of the processing factory and the punishment of the one who violates the rules cannot be enforced. One of the interviewee suggested that **"the official of the Livestock Department is like a soldier with a gun but no bullet."** This excerpt reflects to the facts that the official lack of authority in carrying out their duties.

5. Overlapping works of the government sections

In evaluating the raw milk collecting centers of both the dairy cooperatives and private companies according to Good Manufacturing Practice or GMP, it found that there are 3 government authorities involved and the criteria is set for evaluation of the raw milk collecting center. The three mentioned government authorities are National Bureau of Agricultural Commodity and Food Standards (ACFC), Food and Drug Administration (FDA), and Department of Livestock. As the criteria for evaluation of the three government authorities are set differently, confusion occurs among the responsible officials who make an inspection of raw milk collecting centers and committees of the dairy cooperatives which criteria is the most acceptable. As a result of such confusion during the past 3 – 4 years, none of government authorities make an inspection of the raw milk collecting centers of the cooperative and the companies in the upper northern region which in fact the inspection must be made on yearly basis. The dairy cooperative and companies ignore to improve the raw milk collecting center to qualify the GMP standard.

In the past 20 years, the dairy farmers in upper northern region have developed the method of farming from independency to interdependency. The aggregation of the dairy farmers is made between a dairy farmer's group and a dairy cooperative with objective to support production system that particularly emphasizes on making stable price and secure place of purchase. The precedent operation of the dairy cooperative in upper northern region of Thailand frequently has to encounter with problems and obstacle such as over supplied milk, higher production cost, and dispute among the dairy cooperative's members. From the interview, it found that the way to develop management process of the dairy cooperative in upper northern region of Thailand in this foreseeable future is concluded below:

1. Distributing raw milk to local milk processing factories

Within the upper northern region of Thailand, there are 3 private potential milk processing factories being able to bear on 200 tons of raw milk supplied from the local farmer in a day. But in fact, it turns out that such processing factories have been forced to buy raw milk from the dairy cooperatives in the middle and north-east region instead. From the interview, the interviewees told that in the past some dairy cooperative in upper northern region sold raw milk the private milk

processing factories in local area but when private factories faced a financial difficulty, they delayed in payment causing outstanding debts to the farmers. The dairy cooperative decided to make MOU in selling raw milk with the new factory where they thought has less financial problem in the following year even though the farmers has to bear on higher transportation cost. One interviewee commented that **"now the northern milk goes south and the southern milk goes north."** In addition, the dramatic change that falls upon the world's oil price causes higher costs in management of the dairy cooperative. Therefore if the diary cooperatives in upper northern region make MOU with the three private milk processing factories in their area, they can save much money and decrease risk that may occurs during the transportation of raw milk. Besides they can use the remaining budget in develop the dairy cooperative and milk processing factories.

2. Creating cooperation between the dairy cooperatives and milk processing factories

In the present, most of the dairy cooperatives and the milk processing factories are competing with each other to grab more members in order to increase quantity of daily raw milk and decrease production and operation costs at the same time. Such problem occurs when there is a high demand for the raw milk from the processing factory. One cause of the problem may arises out from increased price of milk powder imported from other countries, the factory then turned back to use the raw milk in the country. And during such period, a great number of dairy farmers of Thailand quitted farming leading to reduced quantity of raw milk and high competition among them. So if the dairy cooperative and processing factories in upper northern Thailand work together and help support each other, do not take advantage from the other, aim for the utmost common benefit, and exchange the academic knowledge, budget and dairy-related technology, their operation will be quite secure and sustainable.

From the interview of the dairy extension expert from Department of Livestock Development, they suggested an idea of management process of the dairy cooperative in upper northern region of Thailand in the future that the dairy cooperative needs to support in adding more numbers of dairy cattle to its members and render service regarding equipments that have not been using all year long such

as a tractor, straw suppression machine and animal feed mixing machine, etc. to widen the opportunity to expand the farm and to reduce the production costs of raw milk per unit especially, for the members who has small farm. Furthermore the cooperative should closely supervise and control the dairy farming – they should a balanced deselecting of the bad dairy cattle and raising the substitute dairy cattle. In a particular case, they can give a higher purchase price of raw milk to the members who comply with the plan. Sometimes, the cooperative is to bear on heavy burden to take care of excessive numbers of substitute dairy cattle, they should give to the dairy farm that has less numbers of dairy cattle as well as give knowledge to members concerning the right care after the dairy cattle giving birth. In accordance with the research of the Livestock Department in 2006, it found that milking dairy cattle has an average day of milking 237.48 days per annum which is considered a little bit less and it reflects that Thai dairy farmers has a problem of unsuitably feeding animal that is not equivalent to the actual need. So the related officials have to explain how to feed the animal before the dairy cattle's delivery particularly, when the milking dairy cattle can produce the highest milk. The plan to solve the breeding problem should be prior planned while the problem may be from incomplete maturity of the dairy cattle and hard to breeding. This will deteriorate the profit and efficiency in producing milk.

During the past time, the dairy cooperatives in upper northern region of Thailand have an independent management process – none of cooperation between the dairy cooperatives has been contributed. The cooperative has no leverage with the dairy-related private company especially, the processing factory and animal feed factory. Therefore the dairy cooperative should join together in purchasing or providing production material from concerned agricultural organization such as Grass Manufacturing Group, Corn Growing Group and Processed Food Group where they can use the waste received from such group to use as roughage feeding the dairy cattle. For the processed food, it can be directly purchased from an animal feed factory by instructing them to manufacture according to the formula required by the dairy cooperative. Buying massive number of processed food will help reduce the expenses, labor costs and management time for the members so that the members can focus on development of their farm to make highest productivity. Moreover dairy

cooperatives' grouping will create more leverage in negotiating or expressing opinions in each time of dairy cooperative meeting of Thailand because in the past the dairy cooperatives in upper northern region has a smaller size of business when comparing with dairy cooperatives in other region especially, in the middle region. So the dairy cooperative in upper northern region should join together to manage its industrial affairs – the pattern of management should be **"group purchasing, group selling and group management"** which will be a sustainable successful solution. Besides it will contributes to a better management process of every dairy cooperative in upper northern Thailand.

Group 3: persons who are entitled to determine plan and policy in producing ready-to-drink milk in upper region's area totaling 3 persons consisted of a representative from Chiang Mai Fresh Milk Co., Ltd., a representative from Gold Milk Co., Ltd. and a representative from U.M. Pookaphan Co., Ltd. who are willing to cooperate. They were asked to give an opinion towards dairy farming of the farmer and management process of the dairy cooperatives in upper northern Thailand. The data gained was analyzed by a technique of analysis content and presented by a describing technique.

The researcher was given cooperative from representatives from the two mentioned companies in expressing their opinion towards dairy farming of the farmer and management process of the dairy cooperatives in upper northern Thailand as well as directions of the dairy industry in upper northern Thailand.

From the interview, it found that the businesses relating with milk processing in upper northern region have adapted their nature of business to be concordant with the changing situation as a result of a government policy that is changing all the time. Sometimes their plan was put on hold or even changed. Particularly, the cancellation of milk zoning from the cabinet has caused a great impact to both companies, as they lost the distributing place to other dairy entrepreneurs in other area who would go into an auction such as Dairy Promotion Organization of Thailand, Wangnamyen Dairy Cooperative Ltd., Nongpohratchaburi Dairy Cooperative Ltd. and Country Fresh Co., Ltd., etc. Both companies who suffer from this changing policy have to adjust their marketing strategy to sell the milk to the new school even they have to bear on higher

transportation costs. Moreover during the past 4 – 5 years, the committees of the two companies had recruited dairy farmers to be their members and established own milk collecting centers to store daily milk gained from the members. Most of the milk collecting centers will be located in the same area of the dairy cooperative especially in Chiang Mai and Lamphun. The interviewees gave their opinion towards recruitment of the companies that during 2007 – 2009, the companies were in high need of raw milk which is used for ready-to-drink school milk as a result in 2006, many dairy farmers in upper northern region decided to quit from the dairy career. The result of this incident affected to the dramatically decreasing raw milk that is produced in the country. While the milk powder imported from other countries especially, Australia and New Zealand is highly reduced because they encountered a drought season and the dairy cattle could produced less milk, the domestic companies competed with each other to buy raw milk from the dairy cooperative. And as a result of the MOU the dairy cooperative made with the processing factory on yearly term, they was unable to sell it to other factories as they said **"raw milk at that time is worth more than gold, even you have money you just cannot buy it."** So the committees of both companies came up with an idea that they should make the dairy farmers their member under their own accord to solve the following problem such as shortage of raw milk, raw milk quality control and dairy farming promotion, etc. The matter is that the companies can put a responsive plan on raw milk manufacturing from the farmers with actual need of the companies in different time of the year especially, during the end of academic semester. The farmers who decided to join in this project are divided into 2 groups: new dairy farmer and dairy farmers who used to be a member of the dairy cooperative or other companies. The reason of this transfer is that the farmers have a dispute with the committees of the dairy cooperative or the owner of the old company. The cause of dispute would be from the raw milk quality check.

At the present time, while both companies have a policy to enhance productive capability of its members, one more interesting and advantageous solution than the dairy cooperative is necessary to put in used – that is raising a dairy replacement (pregnant heifer) which can produce more productivity. The pregnant heifer should be distributed to members to reduce costs in connection with raising a calf and growing

cattle. It also saves workforce and time; giving more time for the farmers to develop their own farms. And this will contribute to the highest efficiency in dairy farming. Differently, the members of the dairy cooperative who will raise the dairy replacement since they are a calf until they reach a productive age which is going to take like 18 months or more and that is going to cost a lot more money especially, a farmer who has a larger number of dairy replacement than milking dairy due to this dairy replacement cannot create income to farmers or that is commonly said “dairy cattle for nothing”.

The dispute between some dairy cooperatives and companies occurred in the past was from the delayed payment of the raw milk. The interviewee explained that the cause of such problem was that the company has to distribute the school milk via procurement of local administrative organizations and the disbursement from the government authority needs to unhurriedly undergo many processes consisted of the political issue during such period. The company was in short of circulating money and could not pay the dairy cooperative in the whole amount. Even though their financial status is getting more secure, the dispute with the dairy cooperative still remains. Another cause of problem is that the company was forced to purchase raw milk from the dairy cooperative outside the upper northern region and to recruit more members for its own benefit.

For the opinion made by the interviewees regarding dairy farming of farmers and management process of the dairy cooperative in upper northern Thailand, it found that the dairy farming has been well promoted for all these years but there are still limitations prevent the dairy farming from being equivalent to the dairy farmers abroad. Such prominent limitation is lack of farming area especially, for growing adequate animal feed for the increasing numbers of the dairy cattle in the present and in the future. They also need more land for independent farming since most of them farmers now tie the dairy cattle in the farmstead – this method can create stress and physical problems affecting to the quality and quantity of raw milk. Most of the farm area is behind their house, that is to say, the farm will be located in the same residential area which keeps them from expanding their farm and causes environmental troubles with the community.

For the opinion made by the interviewees towards management process of the dairy cooperative in upper northern Thailand, they suggested that the management process should be simultaneously developed with dairy farming of the members since the members is one way like a small gear driven the cooperative forward. So if each gear is broken, the cooperative cannot make a full progress. They further gave opinion towards factors affecting the management process of the dairy cooperative in upper northern Thailand which can be concluded into 2 major factors as follows:

1. Factors arisen out of the dairy cooperative's members

1.1. Most of its members have very little knowledge about proper way of dairy farming according to the principle – they still adhere to the former way that emphasizes on increasing the quantity of raw milk per day but they do not give importance to the manufacturing process that can give a higher quality of raw milk that is delivered to the factory each day in different quality.

1.2. Some of its members has been doing a small farm (1 – 10 milking dairy) which frequently face the problem of high production costs per unit if comparing with the medium and large sized dairy farms.

1.3. The members have various limitations in developing the dairy farm. Most important limitation is that lacking of factors of production such as land, budget and workforce, etc. All of these give effect to the dairy farming and management process efficiencies.

1.4 Lack of ownership of the dairy cooperative is still a major obstacle especially the independent farming. There is no cooperation in managing the dairy cooperative. Many members try to avoid taking part in this duty which will be thrown onto the shoulder of chairman, committees and officials. It is easily noticeable that there will be the same committees in some dairy cooperatives for prolonged period.

2. Factors arisen out of the management process of the dairy cooperative

2.1 Leadership of the president and committees is the heart of management process. They must have an ability to motivate the members and officials of the cooperative to pay their attention to the operation of the cooperative. They must also be initiative and acceptable from people both in the organization and outsiders. The dairy cooperatives where is run by a chairman with no leadership skill cannot make a good progress as much as expected. Moreover they have to suffer with

an increasing outstanding debt which is caused by a wrong decision of the leader and too much trustfulness in the leader. Recently many cooperatives have had to encounter with non-transparency in operation.

2.2. There is no effectiveness of administrating the dairy cooperative as expected because concerned parties do not have an ideal, principle and knowledge about the actual operation of the cooperative including lack of managerial skills and knowledge causing problems to the management process all the times.

2.3. Human resource management has no potential, on the other hand, the human resources are not correspondingly put the right job under the right system the committees and officials of the cooperative do not have understanding and do not comply with the assigned roles.

2.4. There is no clarity about duties and responsibilities particularly in dairy farming of the members. Recently, the dairy cooperative will give opportunity to the members to expand their farm independently. As a result of this, the quantity of raw milk the dairy cooperative collects each day is more than the quantity agreed in the MOU the cooperative made with the company so that the cooperative has to bear on this excessive amount. It is necessary for the cooperative to determine the way of farming for its members to keep the quantity of raw milk in the same line with that is agreed with the company.

2.5. The problem lies in management structure, that is to say, for all the past years, related government authorities has been guiding the management structure to the dairy cooperative by rather focusing on governance method than business-based one. The old horizontal management process should be reduced and the new management pattern that put priority to rules, regulations and business-like operation should be promoted.

Consequently, the interviewee expressed their opinion towards development of management process of the small dairy cooperative in upper northern region that since their members is out-numbered; the operation costs per unit will be reversely higher than the medium and large dairy cooperatives, the government authority should lend their hand to keep them operating in the future. If seeing that any small cooperative has less chance to carry on the business, they should help its

members instead especially, the problem of outstanding debts incurred during their career by providing more suitable alternative career for them to make a living.

For expectation of the interviewees towards the dairy industry in upper northern Thailand, they want to see harmony in every party who shares the same interest such as dairy farmers, dairy cooperative, milk processing factory and government authority, etc. They must also be willing to give cooperation in administrating the dairy industry in upper northern Thailand to create a strong and problem-solving association. Moreover every concerned party must aim for common benefit rather than self benefit, do not take advantage from others and determined to deliver the best quality milk with fair price. This should be the relevant path in making secure and sustainable dairy industry of Thailand in the foreseeable future

Section 4.3: Dairy cooperative's management process in Upper Northern Thailand

The method of quantitative research is applied to collect the data from the member level which is separated into 2 groups as follows:

1. Farmer who continue doing dairy farming and are member of dairy cooperative

2. Farmer who quit dairy farming and used to be member of dairy cooperative

Except from the quantitative research, the researcher also used the following methods such as focus group discussion, SWOT analysis and in-depth interview to collect the data both in member and organization levels. The data gained will be used to create proper and efficient management process that is facilitative to the development of the dairy farmers in upper northern Thailand.

From the result of research, it found that the factors influencing to management process of the dairy cooperative in upper northern Thailand can be concluded into 2 factors as described below:

1. Dairy cooperative's management process in upper northern Thailand: member level

According to analysis of individual, economics, social and farm operating factors of the dairy farmers in upper northern Thailand by using a questionnaire (section 1.1) along with analysis of factors influencing to management process of the dairy cooperative in the considering of representatives of dairy farmers in upper northern Thailand by using focus group discussion (section 1.2), it found that the following influences the management process of the dairy cooperative in northern region Thailand:

1.1. Personal basic factors

- Age: from analysis of the data gained from the farmer of both groups, it found that the farmer who quit dairy farming and used to be a member of the dairy cooperative ages average more than the farmer who still do farming and is a member of the dairy cooperative. It illustrates that age comes to be one reason affecting to the decision to quit dairy farming; this information is identical with what

gained from the focus group discussion in which the farmers has expressed that old age will greatly contribute to the decision to stop from this occupation.

- Level of education: from analysis of the data gained from the farmer of both groups, it found that the farmer who quit dairy farming and used to be a member of the dairy cooperative has a higher level of education than the operative dairy farmer who is still a member of the dairy cooperative. It reflects that the higher education affects to the decision whether to continue this career or not; this information is identical to what gained from the focus group discussion in which the farmers has expressed that the farmer who is educated in a higher level will use their knowledge with other occupation. Moreover it also found that the farmer who quits from dairy farming considered this as a secondary job that another way increased income for their family.

- Knowledge in dairy farming: from analysis of the data gained from the farmer of both groups, it found that most of them have good level of knowledge in dairy farming since they are experience-packed in this field. As a result that they have more knowledge and experience, they sometimes neglect to perform the right and proper method of farming in some relevant issues that latterly cause them an unknown problem especially, the problem of quality of raw milk such as contamination of antibiotic in the raw milk, cleanliness standard of raw milk and water contamination in the raw milk, etc. The following consequences are that the farmer turns out to quit from the career or move to be a member of a private company as they are not satisfied with the management of the dairy cooperative's committee especially, when it comes to the raw milk quality examination that is stricter than that of the private company.

1.2. Economics factors

- Number of labours in dairy farming: from analysis of the data gained from the farmer of both groups, it found that most of workforce comes from the family in a kind of husband and wife since most of them still lacks of the workforce while some hire local alien labors. This is one limitation preventing them from expanding the dairy farm to be bigger.

- Financial source: from analysis of the data gained from the farmer of both groups, it found that most of the farmers are in short of circulating

funds in keeping the dairy farm operating or developing or expanding the farm especially, the farmer who has a small farm. In addition, the dairy cooperative does not have enough money to provide a loan for its members adequately and thoroughly.

1.3. Social factors

- Level of participation in various activities of dairy cooperative: from analysis of the data gained from the farmer of both groups, it found that most of them give important in attending monthly and annual ordinary general meetings only since it concerns benefit they ought to receive or comply with the rules and regulations; this information is identical to what gained from the focus group discussion in which the farmers has expressed that a managerial task is a responsibility of the chairman, committee and officer. They reasoned that they do not have managerial knowledge and they do not want to occupy any position or express their opinion in the meeting because they do not want to be liable for the mistake that could happen.

- Acquire information about dairy farming from various medias: from analysis of the data gained from the farmer of both groups, it found that channel of information cannot access to the farmers throughout the area regardless of appropriateness of the content and time of receiving the information; this information is identical to what gained from the focus group discussion in which the farmers has expressed that most of information nowadays is a result from some kinds of researches that cannot be actually applied in the field because of several limitation.

- Communication with officer concerning dairy farming: from analysis of the data gained from the farmer of both groups, it found that in some area there is insufficient number of the officers especially, for the medium and small dairy cooperatives whose location is faraway; this information is identical to what gained from the focus group discussion in which the farmers has expressed that there is not enough officer to take care of the dairy cattle until pessimistic attitude towards the performance of the officer has occurred which directly affects to the cooperative given to the government authority by the local dairy farmers.

1.4. Dairy farm operation factors

- Lack of land for dairy farming: from analysis of the data gained from the farmer of both groups, it found that most of the farmers do not

possess sufficient land and seems to be short of it that will be used for farming and growing the animal feed; this information is identical to what gained from the focus group discussion in which the farmers has expressed that now the community is growing at quite a speed affecting the higher land price, some of them had to move to other area remote from the community and in doing so, it needs a lot of money. Moreover the farmers also encounter problems concerning public utility and transportation. But some decided to quit dairy farming eventually.

- Dairy farming standard recognized from Livestock Department: from analysis of the data gained from the farmer of both groups, it found that farmers do not give importance to improve their farm to be equivalent to required standard since it concerns a lot of money and in some area, the dairy cooperative does not have a policy to adjust the purchase price of raw milk for the qualified dairy farm; this information is identical to what gained from the focus group discussion in which the farmers has expressed that some farmers do not realize to significances of making a standard farm even though it will give benefit to the farmers themselves, dairy cooperatives, processing factories as well as domestic consumers.

- Number of dairy replacement and milking dairy cattle: from analysis of the data gained from the farmer of both groups, it found that most farmers have higher number of dairy replacement than the milking dairy cattle which the Livestock Department has determined that the proper number of dairy replacement should not exceed 25 – 30 percent of the whole amount. The reason why they have more diary replacement than milking dairy cattle is that most of them tend to keep female calf to be raised until they can give milk without considering about genetic history – they have to bear on expenses keeping great numbers of non-milking dairy cattle which affects to the higher production costs.

- Capability on milk production of dairy cattle: from analysis of the data gained from the farmer of both groups, it found that most farmers have in possession of the milking dairy cattle that are able to produce minimum amount of raw milk, and that also affects to the higher production costs.

- Purchase price of raw milk (Baht/kilogram): from analysis of the data gained from the farmer of both groups, it found that farmers who quitted farming is partially contributed by low purchase price of raw milk while the

production costs of raw milk keep skyrocketing – they are not in a coherent direction. The higher price of animal feed tends to continuously raised; this information is identical to what gained from the focus group discussion in which the farmers has expressed that if the production costs get higher and higher especially animal feed while the purchase price of raw milk still remains on the same line, it may make more farmers to quit from this career.

- Cognizance in operation of the dairy cooperative: from analysis of the data gained from the farmer of both groups, it found that most of them have no knowledge, understanding in operation of the dairy cooperative and they do not understand the process of working together; this information is identical to what gained from the focus group discussion in which the farmers has expressed towards management of dairy cooperative that membered farmers only has a right to vote in the meeting.

- Problem and obstacle in dairy farming: from analysis of the data gained from the farmer of both groups, it found that most farmers encounter similar problem regardless of insufficient land for farming, insufficient financial support from the government, accessibility to dairy information, communication with government official, dairy training (especially, members of a small-sized dairy cooperative), low purchase price of raw milk and costly concentrate – all of these much contribute them to quit farming.

During 2005 – 2006 (Table 52), large numbers of dairy farmers in upper northern region decided to quit farming which create a great impact to the dairy cooperative to collect less milk, and to higher operation cost per unit of the cooperative. Therefore the researcher aims to study what factors influencing the decision to continue dairy farming of the farmers. The result gained will be analyzed and used to design management process of the dairy cooperative that facilitate to development of dairy farmers in upper northern Thailand.

From logistic regression analysis by using basic information of personal basic factors, economics factors, social factors and dairy farming operation factors of the dairy farmers in upper northern Thailand (subsection 1.1) to find independent variables of the four major factors and dependent variables that are decision to continue dairy farming. It discovered that there are 6 independent

variables that are related with the dependent with statistical significance at 0.05 as follows:

1. Age: while having a negative relation, it can be explained that younger dairy farmer would rather decide to continue doing dairy farm than older one.

2. Experience in dairy farming: while having a relation, it can be explained that little experienced farmer would rather decide to continue doing dairy farm than the more experienced one.

3. Practice in dairy farming: while having positive relation, it can be explained that dairy farmers who has more efficient operation would rather decide to continue doing dairy farm than the one who has less efficient operation.

4. Satisfaction in operation of government officers: while having negative relation, it can be explained that dairy farmers who have lower level of satisfaction towards operation of government officers would rather decide to continue doing dairy farm than the one who has higher level of satisfaction.

5. Opinion of the dairy farmer in career succession of their child: while having negative relation, it can be explained that farmers who think that their children will inherit their career would rather decide to continue doing dairy farm than the farmers who think that their children will not inherit their career.

6. Problems and obstacles of dairy career (economics aspect): while having negative relation, it can be explained that farmers who encounter less economics problem of dairy farming would rather decide to continue doing dairy farm than the farmers who have more economics problems of dairy farming.

2. Dairy cooperative's management process in upper northern Thailand: organization level

From the analysis of status of dairy cooperatives and processing factories in upper northern Thailand by using SWOT analysis (section 2.1) along with analysis of management process of dairy cooperatives in upper northern Thailand in the considering of representative of dairy farmers who concerning with dairy farming extension in upper northern Thailand by using an in-depth interview (section 2.2), it found that there are factors influencing management process of the dairy cooperatives in upper northern Thailand in organization level as the following:

2.1. Managerial resources

2.1.1. Man: committees of the dairy cooperative in every level have no knowledge and experience in managing the organization. The cooperative lacks of competent personnel to perform the managerial duties. Moreover some cooperative appears to have a dispute among its members. Most importantly, members do not understand their roles, duties and responsibilities as ownership of the cooperative which affects to cooperation level of the overall operation of the cooperative as well.

2.1.2 Material: most of dairy cooperatives do not have sufficient new and fashionable tools and equipments such as tools used in checking raw milk quality, and storing raw milk and computer, etc.

2.1.3. Money: medium and small dairy cooperatives have a problem of funding especially when supporting its members, and developing a raw milk collecting center. They cannot access to low interest loan. One cause of problem is from the low income members – they cannot save it for their own capital especially, the one who has a small farm.

2.1.4. Management: the complicated management structures of the large and medium dairy cooperatives cause the decision to be delayed – unable to catch up with changing circumstance. Moreover each operation will adhere to too many rules – they lack of flexibility in running the cooperative. The importance is that none of actual cooperation and participation is encouraged by its members.

2.2. Management process of the dairy cooperative

2.2.1. Planning: most of dairy cooperative will have a similar annual plan and is frequently come out of its committees and managers while the plan is conducted by an unreliable source of information – there is no pre analysis and no precise and concordant objectives and goals have been prior lay out before actually implemented. Besides, the members do not take part in planning which is another reason why the operation is not successful as firstly expected.

2.2.2. Organizing: large and medium dairy cooperatives will have a complicated management structure and too many chains of command while the power is centralized, that is to say, the committees and managers make unclear duties and responsibilities. Moreover decision making is sometimes too much referring to the

rules and regulations. From the opinion made by the government authorities, it reflects that decision making of the dairy cooperative is not united and its operation does not contribute to independent system.

2.2.3. Directing: power in making decision is given to a chairman or manager and it is in a form of top-down directing. Sometimes the directing is inconcrete and unclear – no deliberate analysis of information before directing. Own thought and emotion comes before reason so that the members feel awkward to comply with and lead to dispute.

2.2.4. Controlling: most of dairy cooperatives do not have clear and precise controlling since the idea of controlling is like finding each other's fault and this will lead to resentment within the cooperative. For all these years, it found that many cooperatives encounter a problem of non-transparent operation of the committees or officials. The members neither pay attention nor take part in controlling the overall operation of the cooperative since they trust them and they have no managerial knowledge and understanding. Most of members expect only being paid for the raw milk on monthly basis and being supported by the dairy cooperative.

Factors influencing to dairy cooperative's management process in upper northern region Thailand both in member level and organization level as described above should be developed at the same time so that it can create more efficient management process since the members are impulsion to this. While the dairy cooperative is deemed important in providing support to its members to help them make a living and be able to feed their family without debts and with satisfaction and pride to do dairy farming – this will contribute to sustainable dairy farming of Thailand.

From the result of the study about factors influencing management process of the dairy cooperatives in upper northern Thailand both in member and organization levels, the researcher shall apply the information gained to create appropriate and efficient management process that facilitates to development of a dairy farming occupation in upper northern Thailand hereafter.

Table 4.78 Problems and obstacles of management process of dairy cooperatives in upper northern Thailand

	Planning	Organizing	Directing	Controlling
Dairy cooperatives in upper northern Thailand	1. Most of plans come from the decision of committees and managers. 2. Planning is aimed for benefit of some groups only. 3. Planning is similar to plan of every year. 4. Lack of reliable source of information for planning 5. No precise and concordant goals and objectives 6. Year-to-year short term planning lacks of consistency. 7. Government authorities influence to decision of the committees and manager of the cooperative. 8. No precise planning such as what to do, how to do, where to do, who is going to be responsible for what task, timeframes and resources	1. Job division is not suitable to each person's ability. 2. Too much power entitled to the manager causes a problem of non-transparent operation. 3. No concrete task division between committees and managers 4. Distortion of dairy cooperative structure causes multi-function to one official and deficient operation. 5. Power centralization at committees and manager 6. Inflexible operation has to follow many rules and regulations – unable to catch the changing market. 7. Organization structure creates more defensive operation than the offensive one (referred to government system).	1. Lack of leadership results in losing faith 2. Some cooperatives give power to the chairman only. 3. Top-down directing loses cooperation from the subordinates. 4. Inconcrete and unclear directing sometimes does not catch attention from subordinates and members who choose to disobey. 5. No thorough analysis of information before directing 6. Directing by personal thought and emotion affecting to resistance from subordinates 7. Management process in a form of hierarchy system causes delay. 8. No follow-up and evaluation of each directing	1. Unclear and inconcrete controlling system 2. Controlling is not taken seriously by its committees since they think it likes catching other's fault which will lead to unnecessary dispute as they thought. 3. Rules and regulations cannot be fully enforced especially in the small cooperatives. 4. Lack of participation from its members who are too trustful in committees 5. No working performance report is periodically made to its members. 6. No effective data storage system is applied so there is no post audit in a case of a problem occurs.

Table 4.78 Problems and obstacles of management process of dairy cooperatives in upper northern Thailand (continue)

	Planning	Organizing	Directing	Controlling
Dairy cooperatives in upper northern Thailand	8. No precise planning such as what to do, how to do, where to do, who is going to be responsible for what task, timeframes and resources 8. No follow-up and evaluation 9. No participation from its members in planning The researcher gave the first priority to participation level of cooperative-related parties in planning because the plan will come from the actual need of the members, in the same time, there will be acceptance and cooperation in implementing the plan.	8. No. precise evaluation standard loses its officers' motivation in working for the cooperative. 9. No personnel development system. 10. Cooperatives in which have its own machine to produce ready-to-drink milk do not have good marketing system. The researcher gave the first priority to suitable duty and responsibility division according to the personnel's qualification (put the right man to the right job) which will contributes to successful operation under determination and willful participation from related parties.	9. Some directing comes from the government official. The researcher gave first priority to the leadership of chairmen, committee and manager who have to be capable in managing and aim for common benefit than individual benefit. They must have ability to motivate and make subordinates and members believe in order to reach out to the success and full cooperation from members,	7. Persons who is entitled to control and supervise others cannot do their job 100% percents because they are afraid that it will create negative impact to the committees and bad image to the cooperative. The researcher gave first priority to precise and concrete controlling system that can be controlled and followed up in every process including determined the index of success to be applied in planning in the following year to make more effective and suitable plan. In addition, this will save managerial resources to the cooperative for the sustainable development.

Table 4.79 Suggestion to dairy cooperative's management process contributing to occupation development of dairy farmers in upper northern Thailand in considering to representative of dairy farmers who concerning promotion of dairy farming.

President / committee of the dairy cooperative	Dairy promotion related officers	Representatives from milk processing factory
1. Providing a place to purchase raw milk from the dairy cooperatives 2. Supporting circulating funds to the dairy cooperatives 3. Animal feed's price and quality controlling 4. Cancellation of milk zoning policy 5. Academic supporting to dairy farmers continuously 6. Dairy-related technology supporting 7. Campaign from government to persuade people to drink more milk that is produced from 100% raw milk and to expand the market of Thai dairy industry	1. Precise and consistent dairy promotion policy by government 2. Sufficient budget allocation from the government to be used in operation of the following officers: artificial insemination official of the district, dairy promotion officer of the district and diary academician, etc. 3. Increasing related officer related with dairy farming especially, artificial insemination officer. 4. Duty and responsibility division especially, controlling and auditing a milk processing factory 5. Interdepartmental cooperation of the government sectors related with dairy farming	1. Dairy knowledge development to farmers particularly, how to the right farming according to the academic principles to make high quality of raw milk. 2. Leadership of a president who must be a person with great vision, honesty, sacrifice and aims for common benefit rather than individual. 3. Dairy cooperatives have to take part in designing dairy farming for its members such as appropriate numbers of dairy cattle, deselection of milking cattle and plan for breeding. etc to create balanced portion between raw milk quantity and actual demand of the factory. 4. Dairy cooperatives must be united and proceed the business in a way of dependency: group purchasing, group selling and helping each others.

Section 4.4: Suggestions for dairy cooperative's management process in Upper Northern Thailand

The study found that overall dairy farmers and dairy cooperative face many problems, including low efficiency of dairy farming, cooperative management problem, and government policy that affect dairy farming. Those problems are obstacles to extension of dairy farming in upper northern Thailand. Accordingly, to develop cooperative management to support improvement of dairy farmers in upper northern, it is needed to perform in both member level and organization level at the same time.

The researcher suggests guidelines to develop proper and efficient management process of cooperative in upper northern Thailand. The data was gained by analysis of questionnaire and focus group discussion along with analysis of in-depth interview conducted with related parties whose responsibility concerns about management of the dairy cooperative in upper northern region. The guidelines can be summarized as follows:

1. Dairy Farmers Development (Member-level) consists of:

1.1. Knowledge and understanding development

1.2. Development of raw milk production of members consists of

1.2.1. Funding Development

1.2.2. Production Factor Development

1.2.3. Dairy Farming Technical Development

1.3. Dairy farming and cooperative management communication channel development of members can be divided into 2 means of communications as follows

1.3.1. Mass Media Development

1.3.2. Interpersonal communicative development

1.4. Technological Development of Dairy Farming

2. Dairy Cooperative Development (Organization-level) consists of:

2.1. Human Resource Development consists of

2.1.1. Cooperative Committee

2.1.2. Cooperative Officers

2.1.3. Cooperative members

2.2. Physical resource development

2.3. Financial resource development consists of

2.3.1. Fund Raising

2.3.2. Capital Reserves Collection

2.3.3. Allocation of Funds

2.4. Management resource development consists of:

2.4.1 Planning that is divided into:

2.4.1.1. Participation

2.4.1.2. Data reliability

2.4.1.3. Clear objectives and goals

2.4.1.4. Proper timeframes

2.4.1.5. Aiming at mutual interest

2.4.1.6. Non intervened planning by government official

. 2.4.2. Organizing that is divided into:

2.4.2.1. Organizational Structure development

2.4.2.2. Segregation of duty development

2.4.2.3. Coordination development

2.4.3. Directing that is divided into:

2.4.3.1. Leadership improvement

2.4.3.2. Commanding development

2.4.3.3. Internal relationship improvement

2.4.3.4. Communication development

2.4.4. Controlling that is divided into:

2.4.4.1. Cooperative controlling development

2.4.4.2. Controlling knowledge and proficiency development

2.4.4.3. Morale supporting development

3. Related Institutes Development consists of:

3.1. Human resource development

3.2. Supporting system development

3.3. Cooperative laws development

3.4. Interdepartmental coordination

3.5. Policy development

3.6. Budget development

The suggestions for proper and effective dairy cooperative's management process in upper northern Thailand can be explained as the follows:

1. Dairy Farmers Development (Member-level)

1.1. Knowledge and understanding development

Dairy farming knowledge dissemination will help dairy farmers to develop their dairy farming process especially producing quality raw milk with lower costs. Moreover, members should be instructed understanding and knowledge about principles of cooperative which encourage them to change attitudes to boost their working coordination and participation in structuring cooperative committee, organizing cooperative activities as well as evaluating ongoing activities. This will definitely strengthen cooperative managing performance to meet demands of members.

1.2. Development of raw milk production of members

Milk production development must be performed in many aspects, including economic, social, and dairy farming technical aspects as follow:

1.2.1. Funding Development

Majority of members of small and medium dairy cooperative are in need of funds to develop their dairy farm. However, cooperative members, especially who have small dairy farms (1-20 dairies), still have a plenty of debts in which suffered from lacks of debt repayment planning, discipline in spending and inadequate income. So, funding support with lower interest rate and extension of time to repay debt should be given to small dairy farmers. Cooperative or institution giving funding support must consider debt repayment potentials of member, as well as keep following up and evaluating usefulness of their loan spending. Besides, they must strictly collect the debts to create farmers' spending discipline and encourage farmers to advance their dairy farming development.

1.2.2 Production Factor Development

Production costs of members tend to rise continuously because cooperative members overly depend on external production factors especially concentrate. Conversely, they rarely grow their own pasture and find other roughage

for alternation, as well as having limited land and labor. Therefore, cooperative should act as purchaser or source provider, coordinating with farmer association such as grass grower association, corn producer association, potato grower association, etc. to use cultivation and transformation leftovers as alternative roughage by directly coordinating with animal feed factory to specify feed formula. This will save time for management process and, most importantly, assist members to cut dairy production cost.

1.2.3. Dairy Farming Technical Development

Technological skills and managerial abilities are both indispensable factors for professional dairy farming. Therefore, cooperative should play important role as the knowledge disseminator to their members, systematically coordinates with government organization and other organizations to share knowledge, and pass on the knowledge and researches to the members, involving them in setting of dairy farming plans including, making farm account book, recoding amount of raw milk from milking dairy, and setting the number of culled cows and dairy replacement to balance dairy population. Cooperative might increase raw milk purchase price to encourage their member participation that will improve their dairy farming skills and interests. Consequently, members are able to develop their dairy farming performance and open to adopt of advance dairy farming technique.

1.3. Dairy farming and cooperative management communication channel development of members can be divided into 2 means of communications as follows:

1.3.1. Mass Media Development

To develop the efficacy of mass media means of communication, relevant government organizations and cooperative should exhaustively consider the selection of the most proper media approach for member with regard to broadcasting time, attractiveness, and member education level. News and information should be broadcasted in concrete means and progressive approach. Besides, post-broadcast results need to be collected and evaluated as well to use the data to develop the efficacy of communicative channel.

1.3.2. Interpersonal communicative development

There are many groups of people who play vital roles of disseminating knowledge, coordinating and supporting the development of dairy farming profession including neighboring farmers, artificial insemination volunteers, district artificial insemination staff, and cooperative officers. Therefore, those groups of people should link up with cooperative members to pass on information and news as well as listen to their comments for further problem-solving processes conducted by cooperative committee. As they have intimate relationships with farmers - acting as the observers who frequently visit farms, give recommendations, and are aware of dairy farmer problems certainly cooperative and government officer must emphasize developing the potential of them by enhancing their knowledge and skill in disseminating dairy farming technique progressively. The group of people will thus be the change agent of dairy farming to other cooperative members then.

1.4. Technological Development of Dairy Farming

The relevant institutions have to create knowledge, abilities, and technological skills to members as well as inform them that technology is not so complicated to understand, Hi-Technology, and expensive. In the other words, cooperative members can understand and practically use it to develop their dairy farming. For examples, they can build small refrigerator to keep raw milk quality after being milked and controlling bacteria. Besides, Milk Ration Program and Bio gas production from cow dung can be used as fuel for cooking or providing alternative energy to farm. Technology implementation can reduce cost and negative environmental impact of nearby community. Therefore, cooperative and relevant institutions should promote, support, and improve technological knowledge of the members continuously.

Moreover, the researcher emphasizes creation of member attitude as the food producers. The relevant institutions dairy cooperative, government organization and private sector need to encourage their members to become aware of importance of roles of dairy producer - to keep quality of their dairy products as well as expecting domestic consumers, especially students, can consume dairy products made from quality raw milk.

Therefore, member - level (dairy farmers) development is regarded as the important factor which affects the success or failure of cooperative as it is business organization of members, for members, and by members. So, members of cooperative play important role of its management process to operate and service to meet its members' demand.

2. Dairy Cooperative Development (Organization - level)

2.1. Human Resource Development

Dairy cooperatives and relevant institutions have to focus on developing potentials of their committees, officials, and members by providing more funds for research, and organize trainings. Besides, cooperatives with limited fund necessarily increase the level of coordination among relevant institutions Cooperative Promotion Department, Department of Livestock, and educational institutions, in order to request academic supporting. Moreover, the cooperatives have to let their committees, officials, and members to share their skills and knowledge, work together to achieve their goals. This will support the efficacy of cooperatives management. So, human resource development needs to give precedence to these groups of people participating in cooperatives administrations:

2.1.1. Development of cooperative Committee

Developing leadership of committee is needful to be conducted gradually especially decision-making skills such as planning, environmental supplying and management, as well as following up and solving problems at work of which are the cores of management processes. Cooperative commission has to make each decision based on credible information, under democracy principles, as well as realize their roles, functions and responsibilities as the leaders of the cooperative for mutual benefit.

2.1.2. Development of cooperative Officers

In order to improve cooperative officers to work effectively, it is important for cooperative committee to emphasize on many approaches. Firstly, the duty segregation is needed to be clear and precisely in line with rules and regulations of cooperative. Secondly, officer recruitment consideration should be conducted properly by knowledge and experiences of responsibility of each position. Finally, officers need be clarified their responsibilities and effectively

coordinate to each other as well as improving operating knowledge of operator progressively. Consequently, the operators will implement their knowledge and experience to improve their performance. Besides, cooperatives must have proper profit sharing to promote operator courage.

2.1.3. Development of cooperative members

Development of cooperative members initiates by improving their attitudes toward cooperative structure to increase their participation in cooperative management and enhance their sense of ownership, participation, and roles in group management. This will thus strengthen pool efforts in working and organizing activities to develop their cooperative. Importantly, it is needed to find the way to change attitudes of dairy farmers from “individual working” to form a “cooperative working”, which supports cooperation among group members as the key purpose of cooperative.

In addition, human resource development is vital basic resource of cooperative development as it is the important factor to affect administrative efficiency of cooperatives. A cooperative can achieve its goal through performance of personnel participation in its management including committee, officers and members. Therefore, cooperative and relevant institutions have to emphasize improving knowledge, vision, experience, skill and attitude of members to enhance their work performance.

2.2. Physical Resource Development

In terms of improve performance of dairy equipment used in keeping and inspecting raw milk quality and develop member dairy information database for cooperative annual planning, most of cooperatives, especially small cooperatives, still have limited funds to improve and modernize dairy equipment because most of them only run a business as product providers for their members. Small cooperatives are not very profitable. Therefore, relevant institutes are supposed to offer funding support for cooperatives to standardize milk collection centers and support business to increase cooperative income. Moreover, developing staff skills to use equipment, tools, and machine effectively will enhance efficiency of cooperative management. It can be noticed that there is relatedness between physical resource development and financial resource development.

2.3. Financial Resource Development

As financial resource is relevant to human resource development and physical resource development, cooperative committee has to emphasize financial resource management in many aspects as follows:

2.3.1. Development of fund raising

Dairy cooperative committees must make a clear understanding and motivate cooperative member to deposit money with them. Consequently, cooperative will use the money to provide loan to members for dairy farming improvement, business expansion and lowering dependency of external investment funds. Most importantly, it will exactly increase sense of ownership of the members, encouraging them to have more participation in cooperative management.

2.3.2. Development of capital reserves collection

Raising capital reserves is important contributing factor of cooperative success because the gradual increase of capital reserves will strengthen and secure financial status of cooperative. Capital reserves are funds used for operating processes of cooperative which cannot be shared, especially when cooperative suffers lack of liquidity that usually resulted from raw milk payments from dairy processing plant were delayed during school holidays. So, cooperative have to prepare detailed information to support their opportunities to make a request for funds from government organization, private organization, or sub-district administration organization in the area. Principally, the loan is accepted in case it is in accordance with the loaning purpose of cooperative to have adequate income to repay a debt and potentially receive a loan.

2.3.3. Development of allocation of funds

Dairy cooperative committee must have a proper allocation of funds, highlighting funds for developing ability of members, committee, and officers. Plus, they should consider allocating more funds for mutual benefits. Cooperative must carry out projects to promote sustainable development of community that is accepted by majority of cooperative members and according to the 7^{th} cooperative principle, “Concern for Community”, especially for the cooperative that dairy farms are facing environmental conflicts with the community. Furthermore,

allocating funds for public interests depends on the amount of cooperative capital reserves.

Most dairy cooperatives have not grown at satisfying rate due to its low profits. Their expenditures tend to increase every year, conversely their business activities have not grown as expected. Majority of cooperatives run 2 main businesses: raw milk provider for diary processing plant, and purchasing animal feeds to sell it for members on credits. The businesses could not drive cooperatives to reach expected profits especially cooperative with limited members, having small amount of milking dairy. So, cooperative committee should consider looking for more profit-oriented strategies or profitable activities apart from running only raw milk trading business. And the new business should be more member-interacting activities such as selling product, dairy equipment to members, and running diary processing business themselves as selling dairy products is more profitable than selling raw milk. At the initial stage, cooperatives need funding support and management system from related institutions in order to operate as professional business organization. Furthermore, the committee has to focus on member saving and spending discipline to improve their self-dependency potentials.

2.4. Management resource development

Dairy cooperative management needs a great combination of managing factors (Man, Material and Money) and 4 basic activities (planning, organizing, directing, and controlling), based on cooperative basic principles, to maximize member collaboration to run business effectively, development of cooperative management, database, and information technology. Therefore, the cooperative committee must emphasize developing cooperative management in following aspects.

2.4.1. Planning

Planning supports improving management and operation of operative in the effective way, saving and capitalizing limited managing resources human, physical, financial resource in the most circumspect and useful way. So, cooperative committee should give prominence to planning processes of cooperative as follows:

2.4.1.1. Participation

Dairy cooperative committee, officer, and member have to work together to reflect on problems, causes, and absolute demands of member to cooperative committee to thus set planning or project in accordance to the problems and demands to propose to annual general meeting.

2.4.1.2. Data reliability

Planning is the management process that includes orderly, credible, systematic procedures, using related data as essential factor to operate especially external environment and internal environment. Therefore, related data is needed to be collected completely, for later being used as database to determine details of plan or project.

2.4.1.3. Clear purposes and goals

Dairy cooperative should set an orderly and accurate planning system in order to have a clear direction of operation. Therefore, cooperative have to set the coherent goal and purpose of plan or project. Then the goal of the project can be used as the criteria of operation evaluation. Furthermore, it arouses the operator to have an accurate goal to achieve their assignment within a period of time and willing to work with full potential than being directed to work

2.4.1.4. Proper timeframes

Since cooperative planning is usually conducted year by year and the operative plan each year is so similar/quite the same, certain plans or projects consequently are intermittent and unsuccessive as expected. Therefore, cooperative committee has to assort planning into 3 plans categorized by period of time as follows:

2.4.1.4.1. Short-term plan: A plan with horizon of lesser than five years, generally includes clear details of operation and budget, suiting for ad hoc situation solving as it can be done in a short period of time.

2.4.1.4.2. Medium-term plan: A plan with horizon of 5-10 years, setting policy and operational roadmap to achieve the cooperative goals. The plan is suitable and open for interim changes, generally in line with state policy, economic situation and private sector demands.

2.4.1.4.3. Long-term plan: a plan with a horizon of greater than ten years, setting in flexible and unspecified goals such as quality dairy producing plan, dairy farming enhancement plan, cost cutting plan, etc. of those needed to conducted progressively.

2.4.1.5. Aiming at mutual interest

As Dairy cooperative is operated and owned by various groups of member, cooperative committee accordingly has to set a plan aiming at mutual benefit of overall group member. Also, they needs to avoid setting plan which is beneficial to only certain groups to support the sense of equality of cooperative operation, which will strengthen cooperative because each group will not want to separate to set a new cooperation themselves.

2.4.1.6. Non intervened planning by government official

Dairy Cooperative committee must be independent and decisive in setting cooperative planning of organization. Government official only acts as committee adviser as being regulated by the government especially in financial planning. Additionally, government official has to encourage cooperative committee, officer, and member to express their opinions to the meeting in order to set plan certainly regarding to demands of member.

A good planning must include precise specifications what, how, where, when, who, cost – in a written form as well as be capable to take action practically and effectively. Most importantly, a member participation planning would be implementable and successful, if cooperative member realizes in their problems and researches the solutions themselves, resulting self-learning process and sense of ownership.

2.4.2. Organizing

Organizing is truly linked with the success of cooperation management. In the other words, if cooperative is well organized, it will amplify its tendency to reach its goals. To organize a cooperative to be in line with organization plan, it is needed to have proper grouping and duty assignment to enhance operative efficacy of cooperative member. Accordingly, the cooperative committee has to emphasize organizing as follows:

2.4.2.1. Organizational Structure development

As in the initial stage of founding cooperative, its business activities were not in variation. Majority of cooperative has been operated in line organization since the time. However, in the present days, cooperative business has expanded with many more members to service. Consequently, the original organizational structure nowadays is too lagging and ineffective in highly-competitive business environment. Therefore, cooperative committee necessarily outsources specialists as advisor to inform and give recommendation about cooperative policy making along with participation of cooperative members. Executive-level management necessarily form a planning team, which includes manager, department manager, and cooperative officer, who actually acknowledge operating problems and suitably service to meet member needs. The team works under suggestions of academic advisor in order to make proper plans and effective outputs. Furthermore, the cooperative committee must develop organizational structure to be well organized and flexible, befitting to controlling and meet the needs of every level of member, emphasizing conducting business-oriented organizational structure

2.4.2.2. Segregation of duty development

Dairy cooperative should develop its segregation of duty and responsibility to be clear and practical/concrete. Cooperative committee must make considerable decision in assigning each position, and clarify tasks and responsibilities to each of them to eliminate possibility of overlapping duties and to enhance operating performance. Moreover, to ensure operator's privilege of decision regarding to range of responsibility supports effectiveness of cooperative management.

2.4.2.3. Coordination development

Dairy cooperative should have improvement on its coordination by all levels, both internal and inter organizational, to boost level of collaboration of interpersonal, inter-department, and inter-organization since each organization cannot definitely set role-assignment to completely cover all tasks and services to their members. Particularly, knowledge and technology sharing/ exchanging, and cooperative growing, will amplify bargaining-power against dairy processing plants. For small and medium cooperatives, they necessarily coordinate

with government organizations progressively and consistently to be given support and facilitation, especially academic support, for mutual benefits of cooperative.

Dairy cooperative management must be in dynamic organizational structure: maintain static organizational structure which segregation of units, roles and line of authority must be adjustable and progress activity to achieve its vital established goal: to open way to member participation in cooperative management indeed.

2.4.3. Directing

To enhance cooperative management effectively, it is important to give priority to directing because it is communicative process which encourages personnel and subordinate to work with full performance to achieve cooperative goals and purposes. Accordingly, it is essential to improve aspects of organizational directing as follows:

2.4.3.1. Leadership improvement

Leadership is regarded as one kind of art which is essential for cooperative executives, especially cooperative president, because it is difficult to persuade personnel of organization to be confident and follow organizational instruction. Therefore, outstanding characteristics of leader feature honesty, sincere, inventive, visionary, and high responsibility. Importantly, they should have characteristics of undiscouraged and are always prepared for problem solving. These characteristics will boost confidence of subordinates to be willing to follow instruction and be dedicative to work for organization.

2.4.3.2. Commanding development

Dairy cooperative should have improvement on its commanding by directing and reporting operative performance through/ authority line, conducting proper and systematic inspection of operation. Besides, cooperative committee should give full authorization and privilege to manager, department head and officer regarding their responsibility to avoid discursive duties and accelerate decision-making process when compared to decision made by committee meeting. Importantly, the decision must be made based on facts democracy principle, and excluding personal opinions.

2.4.3.3. Internal relationship improvement

Internal organizational conflict proves to be an unavoidable part of organization communication. Internal organizational conflict can have several contributing factors, including unclear range of responsibility, inadequate resources. Therefore, cooperative committee inevitably attempt to reduce interpersonal conflict by conducting several methods, including organizing meeting of related personnel, forming a team to resolve conflicts, open for suggestions, and surveying related personnel opinions. Alternatively, the conflict also can be solved by increasing level of interaction between each organization personnel to reduce miscommunication between managers and employees.

2.4.3.4. Communication development

Organizational communication is a vital factor of organizational success. So, commanders should consider their communicative process directing to employers in many aspects, including trustworthy, purport, clear, and befitting to employer ability, to amplify communicative efficacy.

In terms of good communication, commanders must motivate employers to work with full potential, open for chances and involvement to question, comment and suggest, as well as promote team work to them continuously. These will enhance effectiveness of employer performance.

2.4.4. Controlling

Controlling is another indispensable factor to drive cooperative operation to reach its goals because controlling covers checking and inspecting deviations from ranging standards of desired operation. Controlling supports operation to be consistent with established plans, boost awareness of operative problems and barriers in order to improve and make an adjustment to established plans and situations, as well as conducting operative evaluation. Therefore, cooperative committee must emphasize controlling in many aspects as follows:

2.4.4.1. Cooperative controlling development

Dairy cooperative should have concrete and clear controlling system, establishing standard (indicator) of controlling which can be evaluated and tested. Besides, the controlling system is comprehensible, flexible and

adjustable agreeing with changeable plans and situations. Most importantly, controlling must be open for every sector and level of staff to participate in creating and setting controlling system to be accepted and mutually understood.

2.4.4.2. Controlling knowledge and proficiency development

Dairy cooperative must emphasize developing controlling knowledge and proficiency of executives or heads to be capable to effectively manage and control tasks. Besides, they should create a good attitude of cooperative personnel toward controlling system: controlling is not faultfinding but to carry out operation of cooperative to be in line with established plans. Additionally, benefits from controlling can be propagandized to let all staff to realize its advantages.

2.4.4.3. Morale supporting development

Dairy cooperative supervisors have to build courage and morale to subordinates to support them to be good and effective staff, including promoting, salary rising to encourage their performance and good attitude toward controlling system made by supervisors.

Controlling is important process ranging from initial to final steps of cooperative management to curb its operation to its goals in accordance to key cooperative purposes. The most effective controlling is the control conducted by cooperative members, which turns on transparency to its management as well as supporting sense of participation of its members.

The National Economic and Social Development Plan, Volume 8^{th} – 10^{th} emphasize human-centered development by focusing on participatory learning with key principles to enable knowing, understanding, considering, attempting, analyzing, choosing, deciding by themselves to acquire living skills and knowledge application of community people for sustainable development. Therefore, a good management process of cooperative must be open for member managing participation, enabling members, committee, officers, and experts to mutually create shared vision, planning, segregation of duty, problem solving, and performance evaluation. The approaches support cooperative to meet demands of members efficiently and its capability of self-management, and, most importantly, drive cooperative strength and sustainability.

To manage cooperative to reach its goals and success inevitably includes coordination and facilitation from other institutes because cooperative is unable to function completely and extensively to service target group. Therefore, to enhance its management, related institutes must develop in the cohesive way to cooperative as follows:

3. Related Institutes Development

3.1. Human resource development

Related institutes must develop potential of staff who participating in dairy farming by improving their operating skills and knowledge continuously and promptly to enhance their operating performance. Human resource development is important activities which can be conducted personally or in group, including training, inspecting activities, seminar. Moreover, to develop staff morality and ethic to enhance their responsibility, honesty, and learning enthusiasm, maximizes their operative performance.

3.2. Supporting system development

Developing supporting system to facilitate cooperative management, both in member-level and organization-level, government necessarily found institutes to provide academic support in dairy farming and cooperative management, as well as other several institutes, including central financial institute, information center, raw milk and animal feed quality inspection center, dairy development and research institute and etc. Moreover, the institutes resolve technological assessment problem, which is regarded as important barrier in agricultural developing of Thailand, and develop effective diary information database contributing to government, related institutes and cooperative to make operative plans.

3.3. Cooperative laws development

The related institutes should revise cooperative laws to promote operation and development of cooperative because cooperative committee do not dare to conduct some development projects as they are unsure whether it would be against the laws. Consequently, cooperatives have not been developed as expected and cannot compete with private sector. Therefore, it is necessary to revise cooperative laws to

enable cooperative flexible management, carry out more approach strategy and meet needs of its members

3.4. Interdepartmental coordination

Nowadays, operation of related institutes does not perform to support or promote collaboration, causing confusion in authority and responsibility to institutions and operators. Therefore, it is needed to establish clear authority and function of each institution to create coherence in their operation. Moreover, budget can be used to assist interdepartmental coordination to establish integration of operation to effectively support, promote, and help farmers.

3.5. Policy development

Continual changes of government cause lacking of continuity of policy, causing related institutes, operators, and farmers confused and dubious to work. Moreover, farmers lessen their cooperation to related institutes. Therefore, government must make a policy to be continuous and clear, particularly, policy and campaign to encourage people to consume more milk, which is another approach to develop growth of dairy farming business.

3.6. Budget development

Budget is the heart in operating the organization effectively. So, budget allocation of government to its institutes must be in accordance with its established plans. Essentially, effective controlling system is necessary to curb corruption problems

Therefore, suggestions for proper and effective management of dairy cooperatives in upper northern Thailand, both for member level and organization level can be summarized in figure 4.5.

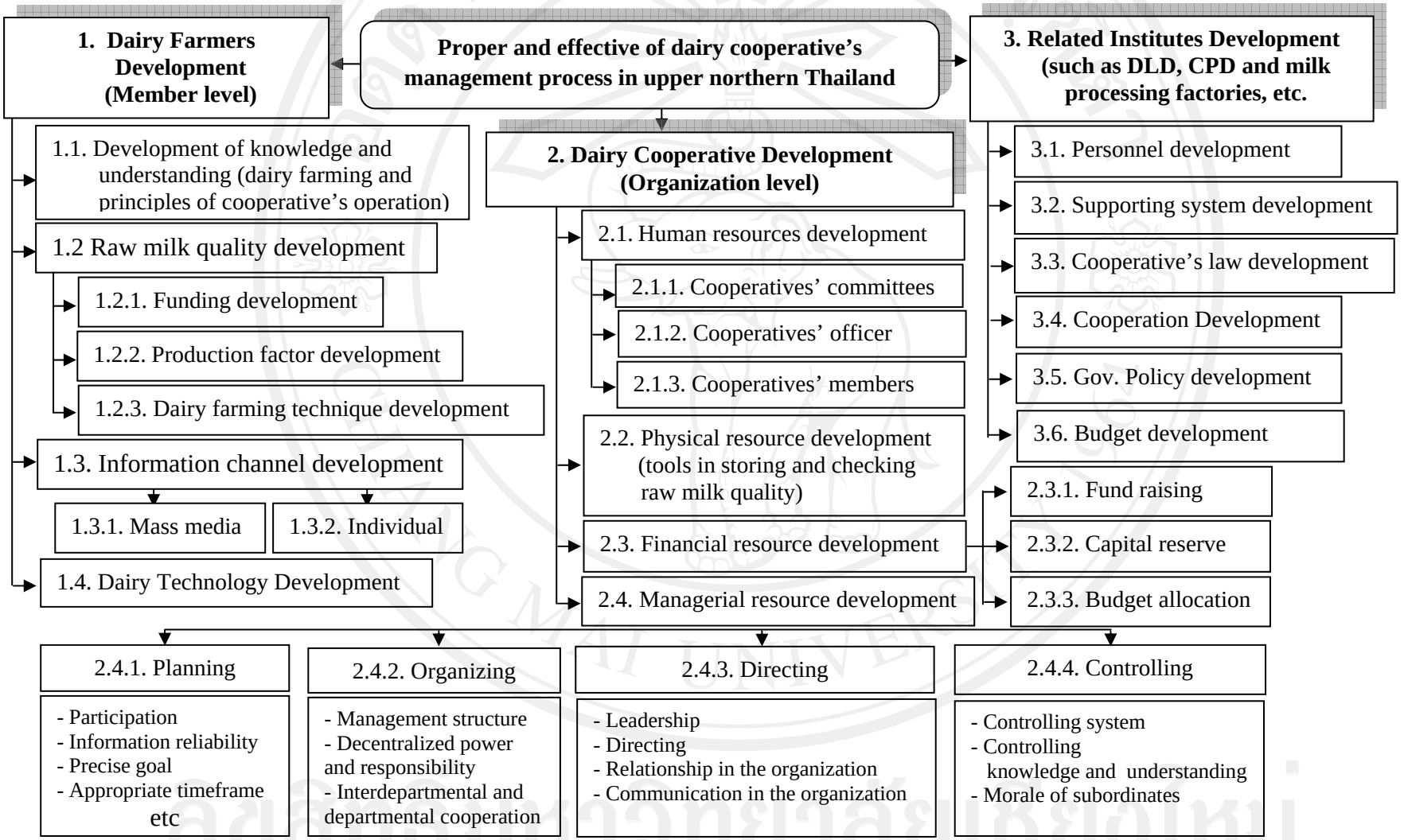

Figure 4.5 Suggestions toward proper and effective management process of dairy cooperatives in upper northern Thailand