

Study on the Assessment of Manpower involved in Dairy Industries with Special Reference to Product Development, Quality of the Dairy Products, and Managerial and Financial Performance

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Final Report



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Acronymes

CoC	Code of Conduct
DDC	Dairy Development Corporation
DLS	Department of Livestock Services
DIA	Dairy Industry Association
FAO	Food and Agriculture Organization
FFF	Fund, Functions and Functionaries
GoN	Government of Nepal
GMP	Good Manufacturing Practice
HTST	High Temperature Short Time
KII	Key Informant's Interview
MSS	Milk Supply Scheme
NDA	Nepal Dairy Association
NDDB	National Dairy Development Board
SOP	Standard Operating Procedure
SMP	Skim Milk Powder
SWOT	Strength Weakness Opportunity and Threat
ToR	Terms of Reference

Executive Summary

In Nepal, the history of formal and organized dairy industry/plants started with the establishment of Yak Cheese Factory in Langtang of Rasuwa district in 1952 with the technical assistance from Food and Agriculture Organization (FAO). The Dairy Development Board was established in 1962 and later it was converted to Dairy Development Corporation (DDC) in 1969. The DDC is one of the GoN owned company that is serving to fulfill demand for dairy products. In late 1970s, the private sector entered into the dairy business with small-scale operations in Kathmandu. Since then a number of dairy plants with different capacity has been established and operating in almost each districts of Nepal including the capital city Kathmandu.

Dairy industry in Nepal is comprised of dairy plants of varied capacity at different locations. The dairy plants are generally categorized as large plants having daily milk processing capacity of 50,000 liters or more, medium plants having daily milk processing capacity of 10,000-50,000 liters, and small plant having daily milk processing capacity of 1,000-10,000 liters.

The overall objective of the study is to assess of manpower involvement in dairy industries with special reference to product development, and quality of dairy products. Specific objectives are:

- To examine the requirement and availability of human resources in the dairy plant/industries,
- To examine the human resource planning of the dairy industries,
- To assess the recruitment process of human resources of the dairy industries including requirement of the academic qualifications,
- To examine the overall use of human resources in different sections of the dairy industries,
- To particularly assess the use of human resources for product development and quality improvement,
- To assess the procedure of product production in large, medium and small dairy industries,
- To assess the problems associated with the human resources in the dairy industries,
- To assess manpower required for effective and efficient operation of large, medium and small dairy industries, and
- To recommend appropriate measures of using human resources in different categories (small/medium/large) of the dairy industries.

Methodology:

Literature review/ desk study, consultative meeting with selected officials in NDDB, survey tools design and get approval, recruitment and training to the field data collectors, collection of list of dairy industries, sampling and sample selection, data collection from the dairy industries and Key Informants, data compilation and report writing was the methodology used for undertaking the study.

Findings:

Altogether 101 dairy industries were surveyed, out of them 54.46 percent were small, 25.74 percent were medium, 16.83 percent were cheese and 2.97 percent were large dairies. There was little gap in the number of dairies in the database and in real field (it was 126 in data base but only 101 in reality). There were 21.78 percent fully automatic, 54.46 percent semi-automatic and 23.76 percent manually operated dairy industries. Apparently, 45.19 percent dairy industries used batch pasteurization, 42.31 percent HTST and 9.62 percent thermization technology for milk product processing. (doesn't become 100%)

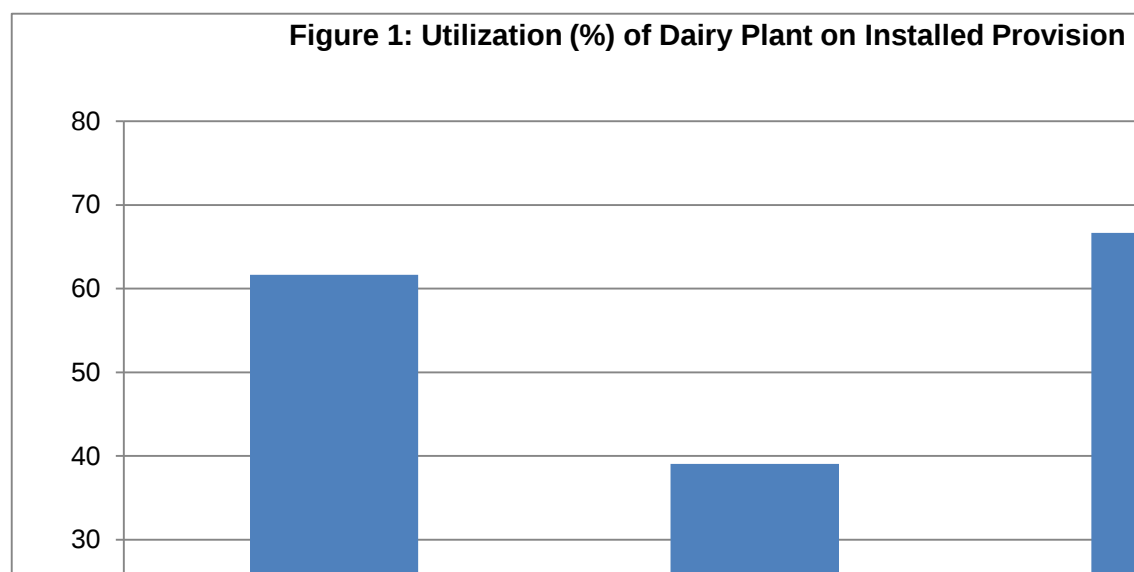
An overwhelming number of dairy industries (88.12 percent) plan the human resource as per demand of their own product, while 4.95 percent plan as per the efficiency, 2.97 percent under took Organization Development Study and rest 3.96 percent undertook SWOT analysis. Dairy industries follow different method for the recruitment process. They collect the academic certificates and nationality certificate along with the application. After collecting the certificates, 47.52 percent only took oral interview, 24.75 percent took written and oral examination. While 20.79 percent recruit directly by head hunting method and remaining 6.93 percent recruit based on the personal relation.

Human resource planning depends on: capacity and size of dairy plant, products and product technology, level of automation, equipment requirements, number of shift operation, legal provision in terms of labour welfare, seasonal variations, centralized or decentralized operations, degree of contractual arrangement etc.

In order to have proper quality, some basic criteria of requirement with specialized human resources are on : Operation of dairy plant & machinery, chemical analysis, microbiological analysis, material management, marketing and distribution, accounting and finance work, supervision and managerial work etc. It is estimated that the ideal ratio of technical and non-technical staff in dairy industry is 3:1. The government owned dairy-DDC- has been demonstrating a model following the said proportion.

There were different sections in the dairy industries. Maximum number of human resources was found used in chilling centers that accounted to 27.93 percent of large industries while it was only 16.13 percent in medium size dairies and small dairies do not have separate chilling centers and some of the dairies took milk from privately or cooperative operated chilling centers. It was revealed more manpower have been used in milk packaging section as 16.13 percent in medium, 15.52 percent large dairies and 16.46 percent manpower were used in small dairies. Other sections were milk collection, creamery, Operation of dairy plant & machinery maintenance, chemical analysis, micro-biology, marketing and distribution, personal administration, account/finance, stores/ maintenance and SMP in large dairies.

Capacity of utilization of dairy industries is 50.44 percent. The small dairies are utilizing 62%, medium are utilizing 39%, large dairies are utilizing 67% and the Cheese are utilizing 21% (Figure 1). Categorically out of the installed capacity fluid milk production was 51.02 percent, dahi was 50.67 percent, paneer was 42.52 percent, butter was 65.6 percent, Ghee was 58.61 percent, cheese 2.84 percent, SMP 41.67 percent, Sweets was 56.03 percent and Ice-cream was 65.63.

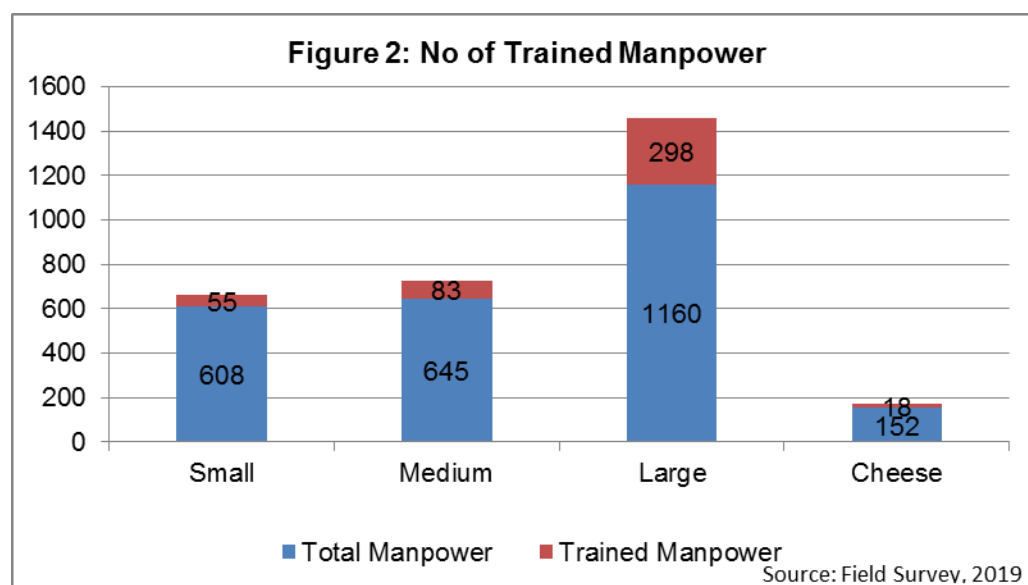


Out of total human resources in different dairy industries, for the product development 34.23 percent technical and 35.91 percent non-technical and for quality improvement 17.58 percent technical and 12.49 percent non-technical human resources were used in the dairy industries. It seems nearly 50 percent non-technical human resource which is bigger proportion.

Presently, cheese production, particularly Yak cheese, has remained the most neglected area of the dairy sector in terms of promotional activities and incentives to the farmers. Production and marketing of cheese was found facing difficulty in terms of quality, storing, transportation and sales. Due to the robust demand for Yak cheese, the market can probably support a considerable increasing in cheese price, especially if more attractive product packaging is developed. DLS is needed to provide the support services whereas NDDDB is required to support for the technical aspects **to produce improve quality** cheese.

Even though product diversification is one of the major options for increasing the quantity of milk going through the formal sector, product diversification of dairy products in Nepal is not well developed.

Most of the dairy industries except DDC shown reluctances to provide the data on the human resources they have and their qualification. However, the available information shows that out of the total technical human resource 91.79 percent were with large dairies. On the other hand, medium dairies accommodate 4.59 percent and the small dairies only 2.54 percent. Out of technical human resource, 92.63 percent were undergraduates and 7.37 percent were graduates. Among the graduates they were either from Dairy Technology, Food Technology, Veterinary or agriculture science while undergraduates were JT/As in agriculture or livestock. Out of the total human resource, only 26.45 percent technical and 13.53 percent non-technical human resource were trained. Thus, large number of human resources was found not trained.



Most of the dairy industries were found reluctances to show and provide the data on the SOP. It was found that only 39.6 percent dairy industries follow GMP and 29.7 percent follow SoP. By type of dairy industries, 37.10 percent small dairy industries follow GMP and 11.29 percent follow SOP. Similarly, 30.77 percent medium dairy follow GMP and 46.15 percent follow SOP and each of the large industries follows GMP and SOP. **On the other hand, 60 percent cheese industries follow GMP and 80 percent follow SOP (were the cheese factories hanged the SOP on the working area?).** On request to show the SOP, entire industries deny.

Based on the information provided by the dairy industries, 32.81 percent said they don't have skilled manpower, 25 percent said there is no training facility, 17.19 percent said rate of skilled manpower is high and 20.31 percent said they are in process of following GMP.

Reasons for none use of SOP It was: 46.48 percent dairy industries mentioned they have no skill manpower, **42.25 percent said they cannot fulfill the demand (what type of demand ? as it is made by the quality control manager for producing same and unique quality of product each and every time of production eventhough the worker will be changed)** and 11.27 percent dairy industries said they cannot afford the rate of skilled manpower.

Only 38.61 percent provided Terms of Reference (ToR) to the staffs, 41.58 percent provided appointment letter, 34.65 percent had overtime provision, 45.54 percent had sick leave provision, and 60.4 percent had delivery leave. Capacity development provision was in 49.5 percent, gratuity was provisioned by 20.79 percent and staff upgrading system was prevail in 48.51 percent dairy industries. Internal audit was practiced by 56.44 percent and external audit by 95.05 percent dairy industries.

There were different problems expressed by the dairy industries in Nepal among them: lack of skilled technical manpower (dairy technologists, mid-level and lower level technical manpower; not properly deployed manpower (agriculturist, veterinarians, animal scientists are also being used in the processing plants); lack of training institutions in the country to produce skilled manpower **with specialization** in dairy sector; reliance on foreign technicians in processing, **equipment & machinery maintenance** and quality control by some processors; industries have not employed product marketing specialist; lack of finance and subsidized finance; marketing of the loose milk elsewhere; lack of opportunity for training on product processing, operation and

maintenance of dairy machinery and equipment, equipment standardization/calibration for uniformity in quality check; overlook the gravity of Good Manufacturing Practice (GMP), Code of Conduct (CoC), Code of Practice (CoP). No well documented SOP for each product the industry produced especially by the small dairies; no reward and punishment system and performance-based grant on milk production has been operationalized; no proper monitoring system on the quality assurance mechanism and human resource planning includes determination of number of personnel along with their qualification. There is no fixed guideline for calculating number of personnel. It depends on the dairy functions as: milk collection, milk processing; milk packing; creamery section; indigenous products; powder plant; utility section; manpower planning for shift etc.

Based on the information collected from different level dairies and observation of the dairy industry premises: to operate small dairies 11-27, medium dairy 27-65, large 68- 107 in large and Cheese industries 6-13 human resource was found effective and efficient. The proportion of technical and non-technical human resource would be 3:1 and out of technical human resource 7-10 percent should be graduate technical and others undergraduate. The medium and large dairy should be headed by Masters Level education and small dairy by graduate. When the dairy industries handle 100,000 liters or more there should be at least 2 master's level technical human resource to head production and quality control. Such big dairy should have at least 2 MBA or chartered accountant to head the department.

Strength of the dairy industries in Nepal:

- Well organized dairy industries; have good physical facility
- Farmers are self-dependent; have indigenous knowledge and skill for milk production among the farmers
- Fully equipped dairy processing plants are installed; following good technology in dairy product processing; established network for milk collection, processing and marketing; good quality products produced; have capacity to produce varieties of dairy product; urbanization, burgeoning population, raise in per-capita income, change in food habit and increased consumption of dairy products; have developed physical facilities and infrastructures and government's priority dairy production and processing.

Weakness of the dairy industries in Nepal:

Lack of trained (Specialized) manpower; high turnover of the manpower; no training facility; poor cold chain facility; poor technology transfer; poor promotional activities; poor quality raw milk in the market; no good facility in processing plant; Seasonal variation in milk production; loan process is tedious and difficult to get loan and high bank's interest rate and scarce capital; unhealthy competition among the dairy farmers and processors; poor availability of high-quality dairy animals (Does it mean high breed or cross breed animal?) / no good resource centers; poor road network to the milk production site; poor marketing and less investment in promotional activities; unable to convince the consumers that the processed milk should be taken; poor laboratory facility; poor extension services for the farmers; small scale dairy animal farming; under developed raw milk collection system and no scientific pricing policy- price fixed by DDC.

Opportunity of the dairy industries in Nepal:

High demand for milk and milk products as varieties of milk products available in the market; government's priority to promote dairy sector; good opportunity for local level employment

generation; development partner's priority in dairy sector; health conscious consumers; increased vegetarian population; increased tourist flow at different locations; good tools for transforming cooperatives to commercial orientation; excellent business for trade balance between urban and rural areas; maximum import of dairy products available; high demand of Nepalese cheese and chhurpi in international market; tangible quantity of SMP and butter oil have been importing; foreign investors are extending eyes and liberalized policy in dairy sector.

Threat of the dairy industries in Nepal:

National dairy policy is not clear; WTO member and free entrance of foreign products; poor trust on the processed milk among the consumers but trust on loose milk.

Conclusion:

Dairy is one of the growing industries in Nepal. Rural farmers have increased cash access through this business. Nearly 2600 people have been working with 101 dairy industries with varied capacity. Out of the total less than 18 percent staffs are trained which is very low compared to the volume of milk handled. There is high necessity to train the existing manpower rather to look for recruitment and look for outsiders. Dairies specially the small dairies can outsource the technical staff and use part time services based on product diversification and slightly increasing the volume of handling. Small dairies are using more non-technical and non-trained manpower resulted to lower milk handling per person. This can be upgraded thorough providing skill training to the available manpower. Entrepreneurship development is needed and it is possible through NDDDB technical support especially for the operationalization of GMP and SoP in small dairies.

Currently the dairies are operating at about 50 percent of its installed provision. So, they are recommended to operate their plants in maximum capacity. This will result in decreasing the number and increasing the efficiency of available manpower. However, especially the large dairies are heavily affected by the seasonal variation in fluid milk collection that affects in plant operation and manpower planning. This issue can be solved through developing milk pockets, providing dairy extension services for steady milk production, replacing buffalo(replacing of buffalo may create problem of lower quality milk regarding lower percentage of fat and SNF so total replacement should not become good suggestion) local cows by cross-breed cows and following code of conduct for fair deal with the milk collectors. Small dairies are less affected by this, so it is recommended to focus on small dairies.

CHAPTER-1 BACKGROUND

1.1 Introduction

In Nepal, the history of formal and organized dairy industry/plants started with the establishment of Yak Cheese Factory in Langtang of Rasuwa district in 1952 with the technical assistance from Food and Agriculture Organization (FAO). The Dairy Development Board was established in 1962 and later it was converted to Dairy Development Corporation (DDC) in 1969. The DDC is one of the GoN owned company that is serving to fulfill demand for dairy products. In late 1970s, the private sector entered into the dairy business with small-scale operations in Kathmandu. Since then a number of dairy plants with different capacity has been established and operating in almost each districts of Nepal including the capital city Kathmandu.

Fund, Functions and Functionaries (FFF) are the basic factors to operate an institution that also applies to dairy plants/industries. The Fund-investment is basic factor that can be collected thorough private sector investment, cooperatives, individuals and also the government and non-government institutions. The functions are directly related to the objectives and or the expected production of dairy plant/industry. The functionary includes **organizational structure** and the machinery to operate the organization. Human resource (manpower) is of the major part an organization to run effectively. Dairy plants are considered as highly labor intensive and the proper management can demonstrate the better utilization of available human resources. Manpower in the form of labor, supervisor and management personnel needs to be properly selected and deployed. Policies and strategies would be practiced to up keep high level of human motivation for dairy plant operations. All of these things can be reflected in an organizational behavior.

Proper planning ensures determination of optimum manpower strength and quality for recruiting process. Various aspects like details of dairy unit operations, their labor requirement with respect to number and skill is considered as input for planning. In some areas trained and skilled manpower is employed with desired experience and qualification, whereas as in other areas only physical qualities and behavior aspects are looked into. Planning consideration is to match the dairy plant's requirements for their functions including product diversity. Management of milk shed and milk procurement, processing, maintenance and utilities, materials management, accounting and finance, marketing, quality assurance, personal management and management information system are the most prominent functions of dairy plants/industries. In this context manpower planning is essential based on the functions with respect to nature, volume and level of specialization. In general, manpower requirement is in the form of ordinary (unskilled), semi-skilled and fully skilled workers. Less skillful job involving physical labor is done by unskilled workers, whereas jobs with more technicalities require semi-skilled or skilled personnel like technicians, operators, supervisors, typists, marketing staff, accounts clerk / accountant / officers and managers. Qualification and experience are determined as per the level of responsibility and degree of technicality. Generally, candidates with basic qualification

are employed and later on suitable exposure and training is provided to improve their skill. Regular performance assessment is needed to ensure proper functioning of the organization including dairy industry.

The private sector has been emerging and contributed a lot in dairy industry. The government sector investment is also significant. In recent years Milk Producers Cooperative Societies (MPCSS) also started the operation of milk chilling vats and milk processing industry to produce different dairy products like pasteurized milk, butter, ghee, ice-cream, paneer, etc. However, dairy industry in Nepal is comprised of dairy plants of varied capacity at different locations. The



Photo: Loading dairy products at Panthi Dairy, Pokhara

dairy plants are generally categorized as large plants having daily milk processing capacity of 50,000 liters or more, medium plants having daily milk processing capacity of 10,000-50,000 liters, and small plant having daily milk processing capacity of 1,000-10,000 liters. The large and medium scale dairy plants produce different products including pasteurized milk, yoghurt, ice-cream, butter, ghee, paneer, etc. Similarly, the small scale semi-mechanized dairy plants handle limited quantity of milk for producing milk products such as pasteurized/unpasteurized milk, ghee, ice cream, paneer, yoghurt, etc. Similarly, the private entrepreneurs are also involved in producing cow and *nak* milk cheese in the mid and high mountains. However, this study covers only the mechanized dairy plants (Large, Medium and Small scale) not the cottage industries whereas for cheese industries, the study will cover all available categories of dairy plant in Illam and Rasuwa districts.

1.2 Objectives of the Assessment

The overall objective of the study is to assess of manpower involvement in dairy industries with special reference to product development, and quality of dairy products. Specific objectives are:

- To examine the requirement and availability of human resources in the dairy plant/industries,
- To examine the human resource planning of the dairy industries,

- To assess the recruitment process of human resources of the dairy industries including requirement of the academic qualifications,
- To examine the overall use of human resources in different sections of the dairy industries,
- To particularly assess the use of human resources for product development and quality improvement,
- To assess the procedure of product production in large, medium and small dairy industries,
- To assess the problems associated with the human resources in the dairy industries,
- To assess manpower required for effective and efficient operation of large, medium and small dairy industries, and
- To recommend appropriate measures of using human resources in different categories (small/medium/large) of the dairy industries.

1.3 Scope of the Assessment/Study

As stipulated in the ToR this study covered the following aspects of human resources involvement in dairy industries:

The study will cover the following aspects of human resources involvement in dairy industries:

1. Functional requirement of the dairy plant
2. Organizational structure of the dairy plant
3. Capacity and size of the dairy plant including milk collection, processing and packing of milk and milk products
4. Products and product development technology
5. Level of automation
6. Number of shift operation
7. Seasonal variations
8. Technical operation of dairy plant and machinery including utilities
9. Quality control of milk and milk products (Pasteurized milk, Yoghurt, Paneer, Ice-cream, Ghee, Cheese) including chemical and microbiological analysis
10. Standard Operating Procedure (SOP) of milk and milk Products produced by dairy industries
11. Material management
12. Marketing and distribution
13. Accounting and financial works
14. Supervision and managerial works
15. SWOT analysis, risk assessment and mitigation measures

CHAPTER 2: METHODOLOGY

2.1 Review of Literature

Literatures related to dairy processing plant's operation & efficiency of operation and human resources used were collected in hard copies and websites. The offices of National Dairy Development Board (NDDB), Dairy Industry Association (DIA), Nepal Dairy Association (NDA), and Department of Livestock Services (DLS) were visited and collect documents related to dairy industries specifically human resource. List of dairy industries and some of the survey tools used by NDDB in similar studies were collected.

2.2 Consultative Meeting with Key Persons of NDDB

Consultative meeting was held with NDDB Key persons in relation to current manpower assessment study to be clearer on the objectives, scope, mission, vision and generated deeper insight on it.

2.3 Survey Tools Design

Based on the review of literatures and consultative meeting with NDDB three sets of survey tools was prepared comprising of (i) Survey tools/questionnaire for dairy plant/industries, (ii) Key Informants Interview (KII) format and (iii) Observation checklist. See Annexes 1-3 for used tools.

2.4 Sample Selection

Based on the information collected from DIA, NDA and NDDB list of dairies by district for the study as specified in the ToR were identified for study purpose. The sample was selected to cover public, private and cooperative operated small medium and large dairy industries.

Table 1: Definition of Category

S. No.	Category of Dairy Plant/Industry	Dairy category
1	1,001-10,000 lit milk processing in a day	Small
2	10,001-50,000 lit milk processing in a day	Medium
3	More than 50,000 lit milk processing in a day	Large
4	Cheese	All cheese producer

2.5 Selection and Orientation/Training to the Supervisor and Enumerators

Enumerators from the desk of Inlogos Pvt. Ltd having experience in data collection and experience in dairy related data were selected administering interview. Orientation training for the supervisors and enumerators was organized to update them on the objectives and scope of the study and impart knowledge and skill on the data collection procedure, the respondents, quality assurance of the data collected. Date for the training was finalized once NDDB approve the inception report and survey tools.

2.6 Field Study

The research team collected field-based information using the approved survey tools.

2.6.1 Interview with the Key Persons in Dairy Plants

One key person in each of the dairy plant was interviewed to get required information using approved semi-structured checklist. In few instances relevant documents (information system) was reviewed.

2.6.2 Key Informant's Interview (KII)

Considering the size and number of dairy plants maximum Three KI was interviewed in a district using approved semi structured checklist. The KI included the concern livestock veterinary officer in local government/agriculture knowledge center, elected local government officials, DIA/NDA members.

2.6.3 Observation of the Dairy Plants/Industries

The assessment/study team members visited the selected dairy plants/industries using approved semi structured checklist and make their technical and managerial observations. Findings of those observations were used as back-up qualitative information for the assessment.

2.6.4 Quality Assurance of the Data Collected

Quality assurance was started from the orientation training to the supervisors and enumerators. They were oriented in the objectives and scope of the study, sampling process, data collection process and method, code of practice, code of conduct, Standard Operating Procedure (SOP) etc. Simulation practice was done among the supervisors and enumerators in presence of expert team members. The core research team members will also be visited in the selected districts and provide feedback to the supervisors and enumerators on their works. The supervisors guided the enumerators and provide feedback for proper data collection during the whole data collection period. Provision for proper communication was made between the field team members, core team and Inlogos management and arrangement was made for prompt action against the field problems faced by the field research team.

2.6.5 Report Preparation

Draft report has been prepared based on the valid information collected from the primary and secondary sources. The data collected from different methods and tools have been triangulated for its validity before analysis. The report has been prepared based on quantitative and qualitative data collected from primary and secondary sources. Besides analyzed tables, the report also includes pictures, graphs, diagrams, narrative analysis, and other inferential statements that sufficiently extrapolate the manpower in dairy industries with special reference to product development, quality of the dairy products and managerial performance.

CHAPTER 3: FINDINGS OF THE STUDY

3.1 Number of Dairies Surveyed

Table 3.1 show that there were 101 dairies surveyed, out of them 54.46 percent were small, 25.74 percent were medium, 16.83 percent were cheese and 2.97 percent were large dairies (list of dairy industry has been presented in Annex 2). Small dairies denote processing capacity 1001 to 10,000 liters, medium denotes dairies having processing capacity 10,001 to 50,000 liters, large dairies denote processing capacity more than 50,000 liters per day. The study covered entire small, medium, large and cheese processing industries in the survey district. It was estimated that there are altogether 126 different type dairy industries to be surveyed. But during the field survey all the listed dairy industries were not available. Apparently 25 small dairies were not present as they have been working only as chilling business while 2 medium dairies were not in operation.

Table 3.1: Number of Dairy Industries Surveyed		
Dairy Type	Number	%
Small	55	54.46
Medium	26	25.74
Large	3	2.97
Cheese	17	16.83
Total	101	100.00
Source: Field Survey, 2019		

3.2 Status of Automation of the Dairy Industries by Type

Table 3.2 clarifies on the automation level of the dairy industries. From the survey it was found that there were 21.78 percent fully automatic, 54.46 percent semi-automatic and 23.76 percent manually operated.

Table 3.2: Status of Automation

Dairy Type	Fully Automatic		Semi-Automatic		Manual		Total	
	No	%	No	%	No	%	No	%
Small	12	21.82	31	56.36	12	21.82	55	54.46
Medium	7	26.92	18	69.23	1	3.85	26	25.74
Large	3	100.00	0	0.00	0	0.00	3	2.97
Cheese	0	0.00	6	35.29	11	64.71	17	16.83
Total	22	21.78	55	54.46	24	23.76	101	100.00
Source: Field Survey, 2019								

Table 3.3 elaborates on the dairy product processing technology. It was found that 45.19 percent dairy industries used batch pasteurization, 42.31 percent HTST and 9.62 percent thermization technology for milk product processing.

Table 3.3: Technology used for Dairy Product Processing

Dairy Type	Thermization		Batch Pasteurization		HTST		Total	
	No	%	No	%	No	%	No	%
Small	7	11.48	31	50.82	23	37.70	61	58.65
Medium	0	0.00	8	30.77	18	69.23	26	25.00
Large	0	0.00	0	0.00	3	100.00	3	2.88
Cheese	3	21.43	11	78.57	0	0.00	14	13.46
Total	10	9.62	47 50	45.19	44	42.31	104	100.00
<i>Source: Field Survey, 2019</i>								

3.3 Use of Human Resource in Dairy Industries

Man, money and machinery are the heart of industry. It goes without saying that human resource is of primary importance to any productive activity. In a dairy plant, which is considered to be highly labor intensive, the proper planning and use of human power become highly significant to get proper productivity? Manpower in the form of labors, supervisors and management personnel needs to be properly selected and deployed to have optimum output and to carry out operations smoothly. Suitable policies and strategies should be practiced to up keep high level of human motivation towards the dairy plant operations. Proper work culture establishes belongingness among personnel and ensures self-motivation for work. The atmosphere becomes so congenial that all human resource from labors to managers behaves in the context of the organizational objectives.

3.3.1 Organizational Structure

Human resource planning has to go with the organizational structure involving and interworking all of its functions. A most commonly used organizational structure of dairy plant is given in figure below. The working of departments other than plant work is done in day shift, whereas plant work is done in one or more shifts based on workload or market requirements. Production, maintenance and quality control functions require round the clock working through shifts. Usually three shift operations are common in dairy plants. Shifts are headed by senior managers and supported by lower management level functional in-charges for processing, production, quality control and maintenance. Each of these functions is provided with required manpower in each shift. Shift in-charges head all the line functions of their shift. Different methods have been used to identify the requirement of human resource in the dairy industry. A typical organizational structure for large dairy industry has been present in Figure 3.

Figure 3: Organizational Structure for Dairy Plant Operating at the Level of >50000 lit/day

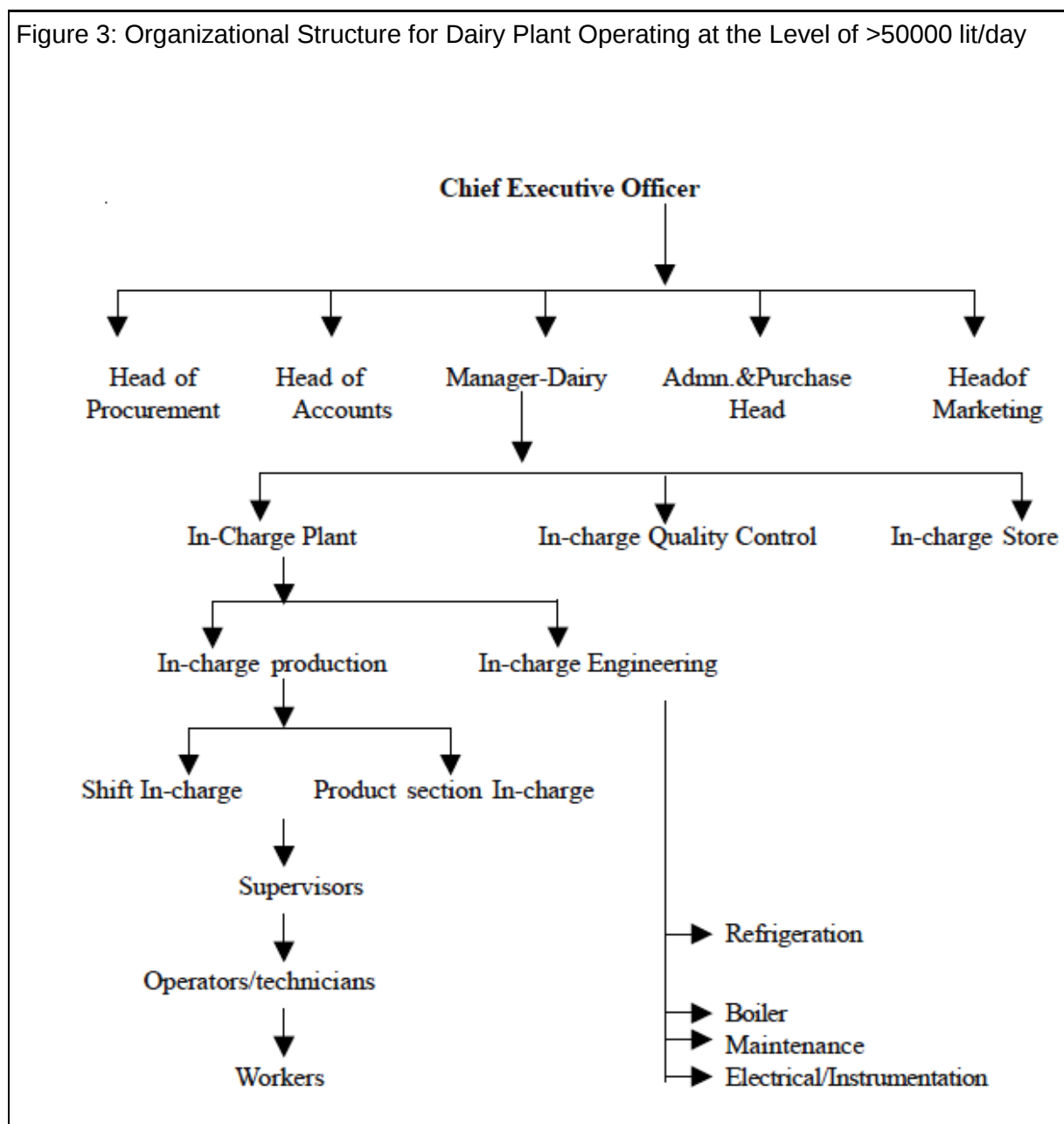
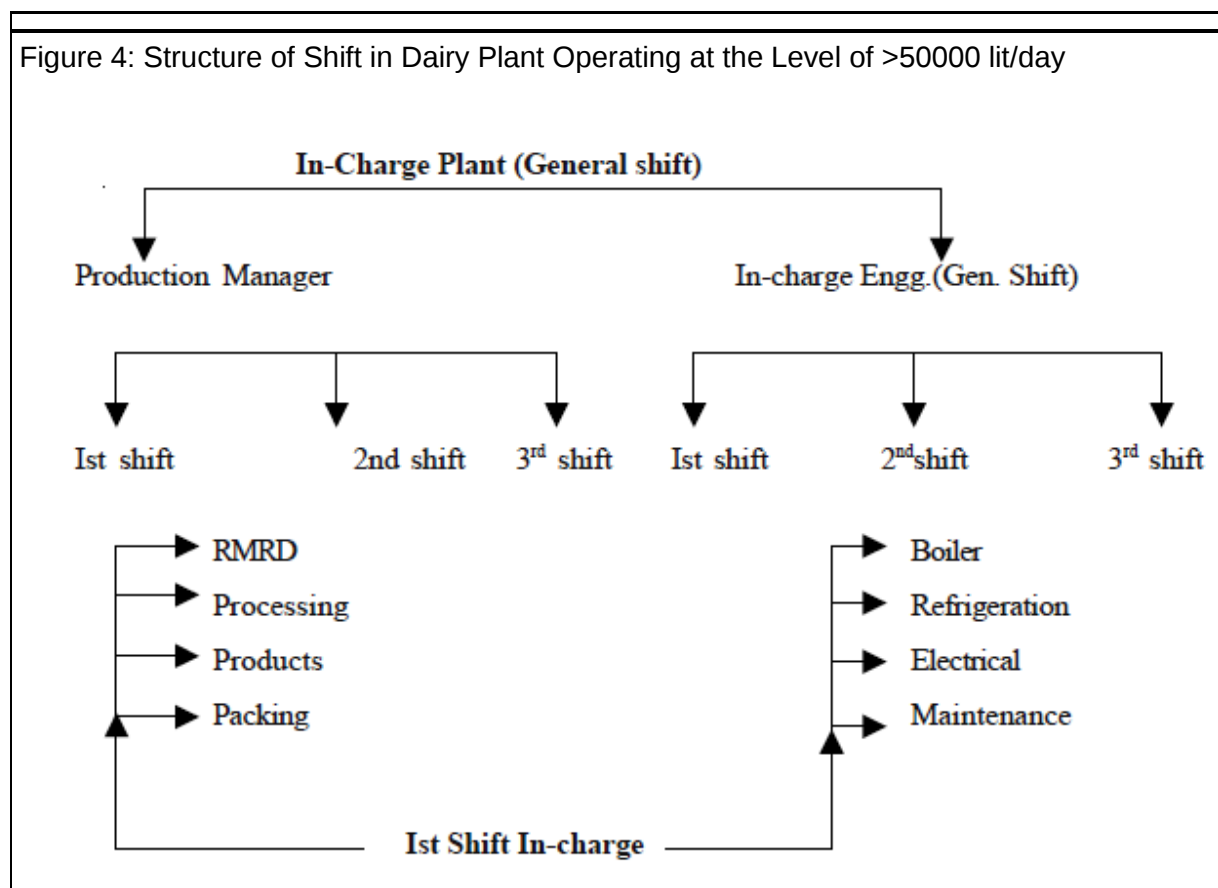


Figure 4: Structure of Shift in Dairy Plant Operating at the Level of >50000 lit/day



As per table 3.4, different methods have been used by the dairy industries on the human resource planning. Most common method followed is finding demand for dairy products and plan for required human resources. Survey findings shows that 88.12 percent of the dairy industries plan the human resource as per demand of their own product. On the other hand 4.95 percent plan by assessing staff efficiency and 2.97 percent under took Organization and Development (O&D) Survey to for planning human resources. Out of the 3.6 percent dairy reported that they used to follow SWOT analysis.

3.3.2 Human Resource Planning

According to Key Informants, planning of human resource needs to be practical enough to match the dairy plant requirements. Proper planning ensures determination of optimum manpower strength and quality for recruiting process. Various aspects like details of dairy unit operations, their labor requirement with respect to number and skill have been considered as input for planning. In some areas trained and skilled manpower have been employed with desired experience and qualification, whereas as in many areas only physical qualities and behavior aspects have been looked into. In order to have effective planning of human resource few things has to be considered.

Table 3.4: Methods of Human Resource Planning of the Dairy Industries

Dairy Type	Methods Followed								Total	
	Finding Demand for Dairy Products		SWOT Analysis		Organization & Development Survey		Assess Staff Efficiency			
	No	%	No	%	No	%	No	%	No	%
Small	49	89.09	3	5.45	1	1.82	2	3.64	55	54.46
Medium	25	96.15	0	0.00	0	0.00	1	3.85	26	25.74
Large	1	33.33	1	33.33	1	33.33	0	0.00	3	2.97
Cheese	14	82.35	0	0.00	1	5.88	2	11.76	17	16.83
Total	89	88.12	4	3.96	3	2.97	5	4.95	101	100.00
Source: Field Survey, 2019										

Source: Field Survey, 2019

Table 3.5 below explains on the recruitment process of the human resources. Dairy industries follow different method for the recruitment process. They collect the academic certificates and nationality certificate along with the application. After collecting the certificates, 47.52 percent only took oral interview, 24.75 percent took written and oral examination. However, 20.79 percent recruit directly by head hunting method and remaining 6.93 percent recruit based on the personal relation.

Table 3.5: Recruitment Processes of Human Resources

Dairy Type	Process Followed for Recruitment								Total	
	Written and oral examination		Oral examination/ interview		Head hunting		Personal relation			
	No	%	No	%	No	%	No	%	No	%
Small	7	12.73	33	60.00	11	20.00	4	7.27	55	54.46
Medium	9	34.62	13	50.00	3	11.54	1	3.85	26	25.74
Large	3	100.00	0	0.00	0	0.00	0	0.00	3	2.97
Cheese	6	35.29	2	11.76	7	41.18	2	11.76	17	16.83
Total	25	24.75	48	47.52	21	20.79	7	6.93	101	100.00
Source: Field Survey, 2019										

Source: Field Survey, 2019

3.3.3 Human Resource and Quality Aspects

As per discussion with Key Informants and discussed above dairy plants involve ordinary to specialized and labor intensive to automatic operations. Operation and maintenance of sophisticated plant machinery, laboratory instruments and other services including book keeping, accounting and marketing do require trained manpower with basic qualifications. The selected manpower is then further trained according to the requirement of operations. In order to have proper quality, some basic criteria are to be laid down as discussed below:

a) Operation of Dairy Plant & Machinery: The candidate should have basic knowledge of machines. As far as possible candidate should be ITI qualified in the trade of Fitter or electrical with required practical apprenticeship training. Matriculate or non-ITI background candidates with appropriate experience may be considered for process machinery operations.



Photo: Milk processing at Kalaiya Dairy, Bara

b) Chemical Analysis: Laboratory work-involving analysis of raw and finished products by scientific testing requires candidates **having graduates in Dairy/Food technology/Agriculture Animal science are suitable for such jobs.**

with chemistry background and therefore graduates in Chemistry (As graduates in chemistry only know about the chemical reactions but the actual finished product test can only done by the graduate and degree holder in dairy and food technology) ,

c) Microbiological Analysis: Dairy products need to be tested for their microbiological quality. Various analyses like efficiency of cleaned surface, hygiene of surrounding atmosphere and bacteriological quality of ingredients and finished products etc. are done to ensure this aspect. To carry out this work, professionally qualified candidates with B.Sc in microbiology/ Dairy /Food technology are suitable.

d) Material Management: Now a day due to high degree of competition and cost, the procurement and safe storage of various materials has become highly scientific and specialized job. An experienced science graduate or qualified material management professional would accomplish such jobs with effectiveness.

e) Marketing and Distribution: Highly perishable nature of milks and milk products requires experienced personnel to carry out the operations **with cold chain maintained during marketing and promotional activities for more product sale.**

f) Accounting and Finance work: Dairy plant requires two types of accounting. One is related to accounting of various materials (physical accounting) during manufacturing. Whereas, other type of accounting relates to financial transactions related to fund flow. Technical background personnel would better do former type of accounting, whereas latter type of accounting requires skills and knowledge in accounting and book keeping including financial analysis and preparation of books of account.

g) Supervision and Managerial work: Dairy plants involve supervision of numerous operations and personnel. In order to effectively supervise the work, entire operation is divided in to shift operations and section wise work (refer Tables). Shift or section in-charges look after the work and people under their jurisdiction. In order to have effective supervision, the in-charge should be professionally qualified and have good grasp of the entire work. Dairy plant production work

is normally looked after by dairy or food technologist /engineers, whereas quality control is headed by qualified dairy/food technologists, chemists or microbiologists. Utility section is headed by technical professional; such as dairy, mechanical, electrical or chemical engineer. Manager of the dairy plant should be highly experienced technologist or engineer with sufficient knowledge of planning, administration and information technology. Milk procurement activities are suitably headed by veterinary, dairy or agriculture graduates having experience of organizing dairy co-operatives and looking after milk procurement routes.

According to Table 3.6 below, there were different sections in the dairy industries. Maximum number of human resources was found used in chilling centers that accounted to 27.93 percent of large industries while it was only 16.13 percent in medium size dairies and small dairies do not have separate chilling centers and some of the dairies took milk from privately or cooperative operated chilling centers. It was revealed more manpower have been used in milk packaging section as 16.13 percent in medium, 15.52 percent large dairies and 16.46 percent manpower were used in small dairies. Other sections were milk collection, creamery, maintenance, chemical analysis, micro-biology, marketing and distribution, personal administration, account/finance, stores/ maintenance and SMP in large dairies.

Table 3.6: Available Human Resources in Different Sections of the Dairy Industries

Sections in Dairy Industry	Type of Dairy							
	Small (N= 55)		Medium (N=26)		Large (N=3)		Cheese (N=17)	
	No	%	No	%	No	%	No	%
Milk collection	55	9.05	52	8.06	35	3.02	27	17.76
Milk Processing	55	9.05	52	8.06	35	3.02	27	17.76
Milk packaging	100	16.46	104	16.13	180	15.52	0	0.00
Creamery (Butter and Ghee)	55	9.05	52	8.06	42	3.62	17	11.18
Maintenance	55	9.05	52	8.06	48	4.14	17	11.18
Chemical analysis	36	5.93	26	4.03	65	5.60	7	4.61
Micro-biology	4	0.66	26	4.03	30	2.59	0	0.00
Marketing and distribution	45	7.41	26	4.03	120	10.34	17	11.18
Personnel Administration	55	9.05	52	8.06	55	4.74	17	11.18
Account/Finance	55	9.05	26	4.03	48	4.14	9	5.92
General store	47	7.65	33.8	5.24	30	2.59	5	3.29
Maintenance store	46	7.57	39	6.05	48	4.14	9	5.92
Chilling centers	0	0.00	104	16.13	324	27.93	0	0.00
SMP	0	0.00	0	0.00	100	8.62	0	0.00
Total	608	100.00	645	100.00	1160	100.00	152	100.00

Source: Field Survey, 2019

Different practices were observed in the dairy industries in use of human resource in practice as follows:

- Small dairies: Normally single person oversee many section. But number of staff mainly determined by type of product and volume of production. They economise the manpower.
- Medium dairies: Normally milk reception, filling done by the specific manpower, but for other purpose single person oversee many section. Number of staff members mainly determined by type of product and volume of production.
- Large dairies: They have different sections in the industry and use human resource separately. Since DDC is government owned industry, it has many staff compared to other dairy industries. This is due to many chilling centres and human resource hired in different stage technology development.

3.4 Human Resources for Product Development and Quality Improvement

Table 3.7 explains on the type of dairy products installed capacity and current status of capacity utilization. Most commonly prepared dairy products were fluid milk and dairies industries are operating only 50.44 percent of their capacity. Dahi is utilization 50.67 percent of its capacity. Capacity of utilization of paneer is 42.52 percent, and butter is 65.6 percent. Likewise, Ghee is utilizing 58.61 percent, Cheese 227.84/27.84 percent, SMP 41.67 percent, Sweets 56.03 percent and Ice-cream 65.63. Thus, it was concluded that the dairy industries are utilizing only about 50 percentage of their capacity.



Photo: Milk processing at Purba Nepal Dugdha Bikas Kendra, Damak,

Table: 3.7 Installed Provision against Current Production (Lit/day)

Milk Product	Dairy Type	Installed Provision	Current Production	% Utilization
Fluid Milk	Small	171700	113410	66.05
	Medium	553000	216000	39.06
	Large	325000	200000	61.54
	Cheese	18700	9540	51.02
Total		1068400	538950	50.44
Dahi	Small	45090	31270	69.35
	Medium	97900	36719	37.51
	Large	35000	22200	63.43
	Cheese	0	0	0.00
Total		177990	90189	50.67
Paneer	Small	7265	3935	54.16
	Medium	15475	5571	36.00

Milk Product	Dairy Type	Installed Provision	Current Production	% Utilization
	Large	1500	800	53.33
	Cheese	0	0	
Total		24240	10306	42.52
Butter	Small	2879	2957	102.71
	Medium	8550	5783	67.64
	Large	3500	1050	30.00
	Cheese	2	5	250.00
Total		14931	9795	65.60
Ghee	Small	2602	855	32.86
	Medium	6523	2653	40.67
	Large	3100	3000	96.77
	Cheese	4680	3400	72.65
Total		16905	9908	58.61
Cheese	Small	0	0	
	Medium	0	0	
	Large	0	0	
	Cheese	11600	3230	27.84
Total		11600	3230	27.84
SMP	Small	0	25	
	Medium	0	0	
	Large	120000	50000	41.67
	Cheese	0	0	
Total		120000	50025	41.69
Sweets	Small	165	145	87.88
	Medium	700	400	57.14
	Large	1000	500	50.00
	Cheese	0	0	
Total		1865	1045	56.03
Ice-cream	Small	910	1672	183.74
	Medium	7000	4245	60.64
	Large	4000	1900	47.50
	Cheese	0	0	
Total		11910	7817	65.63
Khowa	Small	1000	750	75.00
	Medium	200	10	5.00
	Large	0	0	
	Cheese	0	0	
	Total	1200	760	63.33
Grand Total		1068400	538950	50.44

Source: Field Survey, 2019

Table 3.8 elaborates on the manpower used for different product production and quality control. Out of total human resources in different dairy industries, for the product development 34.23 percent technical and 35.91 percent non-technical and for quality improvement 17.58 percent technical and 12.29 percent non-technical human resources were used. It seems there is more than 48 percent non-technical manpower in dairy industry. This proportion is quite high. Comparatively small dairy are using high proportion of non-technical human resources.

Table 3.8: Manpower Used by the Dairy Industries for Different Products

Milk Product	Dairy Category	Staff for Product Development				Staff for Quality Improvement				Total Number	
		Technical		Non-Technical		Technical		Non-Technical		Technical	Non-Technical
		No	%	No	%	No	%	No	%		
Fluid Milk	Small	26	16.88	75	48.7	18	17.53	26	16.88	44	101
	Medium	48	25.13	98	51.31	14	13.61	19	9.95	62	117
	Large	149	46.27	55	17.08	29	28.88	25	7.76	178	80
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		223	32.95	228	33.21	159	20.23	107	13.61	382	335
Dahi	Small	18	13.14	78	56.93	13	9.49	28	20.44	31	106
	Medium	26	36.11	37	51.39	4	5.56	5	6.94	30	42
	Large	85	50.3	22	13.02	48	28.4	14	8.28	133	36
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		129	34.13	137	36.24	65	17.2	47	12.43	194	184
Paneer	Small	15	11.72	79	61.72	10	7.81	24	18.75	25	103
	Medium	27	24.11	78	69.64	3	2.68	4	3.57	30	82
	Large	45	42.45	19	17.92	30	28.3	12	11.32	75	31
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		87	25.14	176	50.87	43	12.43	40	11.56	130	216
Butter	Small	8	22.86	20	57.14	7	20	0	0	15	20
	Medium	30	34.48	54	62.07	1	1.15	2	2.3	31	56
	Large	41	41.84	16	16.33	28	28.57	13	13.27	69	29
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		79	35.91	90	40.91	36	16.36	15	6.82	115	105
Ghee	Small	5	12.5	18	45	3	7.5	14	35	8	32
	Medium	26	49.06	26	49.06	1	1.89	0	0	27	26
	Large	46	45.1	16	15.69	28	27.45	12	11.76	74	28
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		77	39.49	60	30.77	32	16.41	26	13.33	109	86
Cheese	Small	0	0	0	0	0	0	0	0	0	0
	Medium	0	0	0	0	0	0	0	0	0	0
	Large	2	6.9	9	31.03	10	34.48	8	27.59	12	17

Milk Product	Dairy Category	Staff for Product Development				Staff for Quality Improvement				Total Number	
		Technical		Non-Technical		Technical		Non-Technical		Technical	Non-Technical
		No	%	No	%	No	%	No	%		
	Cheese	30	35.71	12	14.29	19	22.62	23	27.38	49	35
Total		32	28.32	21	18.58	29	25.66	31	27.43	61	52
SMP	Small	0	0	0	0	0	0	0	0	0	0
	Medium	0	0	0	0	0	0	0	0	0	0
	Large	61	64.89	14	14.89	16	17.02	3	3.19	77	17
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		61	64.89	14	14.89	16	17.02	3	3.19	77	17
Sweets	Small	0	0	3	100	0	0	0	0	0	3
	Medium	2	50	1	25	1	25	0	0	3	1
	Large	30	44.12	11	16.18	16	23.53	11	16.18	46	22
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		32	42.67	15	20	17	22.67	11	14.67	49	26
Ice-cream	Small	3	7.5	17	42.5	0	0	20	50	3	37
	Medium	26	20.8	98	78.4	1	0.8	0	0	27	98
	Large	74	52.11	24	16.9	31	21.83	13	9.15	105	37
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		103	33.55	139	45.28	32	10.42	33	10.75	135	172
Khowa	Small	7	38.89	2	11.11	9	50	0	0	16	2
	Medium	0	0	1	100	0	0	0	0	0	1
	Large	12	54.55	5	22.73	3	13.64	2	9.09	15	7
	Cheese	0	0	0	0	0	0	0	0	0	0
Total		19	46.34	8	19.51	12	29.27	2	4.88	31	10
Grand Total		878	34.23	921	35.91	451	17.58	315	12.29	1329	1236

Source: Field Survey, 2019

Chitwan milk is now operating to use the milk in flush season and producing SMP and dairy whitener. Sujal Dairy also produces dairy whitener.

Presently, cheese production, particularly Yak cheese, has remained the most neglected area of the dairy sector in terms of promotional activities and incentives to the farmers. The nak/chaury milk producers, by being located in the difficult terrains of high mountain regions far away from the service delivery points, are neglected in almost all aspects of clean milk production; this may be the reasons that the cheese industries are found sick. Production and marketing of cheese was found facing difficulty in terms of quality, storing, transportation and sales.

Since the Yak cheese is a specialty product of Nepal, it should be preserved and promoted by every means. Moreover, the cheese producers should be thoroughly imparted with the technical know-how of cheese production. Due to the robust demand for Yak cheese, the market can probably support a considerable increasing in cheese price, especially if more attractive product

packaging is developed. DLS is needed to provide the support services whereas NDDB is required to support for the technical aspects **on quality** cheese production.

Even though product diversification is one of the major options for increasing the quantity of milk going through the formal sector, product diversification of dairy products in Nepal is not well developed. About 80 per cent of the processed milk in Nepal is sold as pasteurized milk leaving only a marginal quantity for being converted into other milk products. Nepalese dairy industry can be very much benefited through product diversification in terms of improving the overall operational profit by utilizing additional milk, and substituting imported dairy products, opening export possibility in longer term, and improving the overall sustainability of the sector.



Photo: Cheese production at Pachamrit Dairy Udyog, Pashupatinagar, Ilam

However, **production** **product** diversification in the dairy sector is limited mainly due to low quality raw milk, lack of qualified technical staff for product development, lack of assessment of market potentiality of different products, and reluctant private sector to introduce new products owing to risk. So as to achieve the objective of product diversification the measures to be adopted include improvement of raw milk quality, training for fulfilling the need of skilled manpower, market assessment of the potential products, transfer of technology from the developed countries, encouragement to the private sector for carrying out research and product development projects with technical collaboration, and dissemination of information on product demand, supply and prices. For this, joint efforts of NDDB, DDC and private dairy entrepreneurs are sought.

Table 3.9 explains on the manpower used in the DDC. It was found that two third (75.16 percent) human resources were technical and 24.84 percent were non-technical. As the DDC has been the model dairy industry operated under government management and the proportion of technical and non-technical human resource used was as standard.

Table 3.9: Manpower in Dairy Development Corporation (DDC), Nepal

Milk Supply Schemes	Technical					Non-Technical					Grand Total	%
	Officer	%	Assistant	%	Total	Officer	%	Assistant	%	Total		
Kathmandu MSS	16	6.15	177	68.08	193	11	4.23	56	21.54	67	260	33.99
Biratnagar MSS	7	5.04	102	73.38	109	3	2.16	27	19.42	30	139	18.17
Hetauda MSS	5	5.10	72	73.47	77	3	3.06	18	18.37	21	98	12.81
Milk production sales Scheme	6	3.49	125	72.67	131	4	2.33	37	21.51	41	172	22.48
Lumbini MSS	4	7.84	24	47.06	28	1	1.96	22	43.14	23	51	6.67
Janakpur MSS	3	15.00	13	65.00	16	2	10.00	2	10.00	4	20	2.61
Nepalgunj MSS	2	11.11	13	72.22	15	2	11.11	1	5.56	3	18	2.35
Dhangadi MSS	1	14.29	5	71.43	6	1	14.29	0	0.00	1	7	0.92
Total	44	5.75	531	69.41	575	27	3.53	163	21.31	190	765	100.00

Source: Field Survey, 2019

The Nepalese dairy industry severely lacks skilled manpower and organized and recognized education for the sector. Dairy processing is a complex task and it needs specialized manpower like dairy technologists, and dairy industry operators with medium level education in milk handling, processing, hygiene, equipment operation, product manufacturing, quality control and equipment maintenance. In addition, professionals in management, finance and marketing are also equally required. But very few existing dairies in Nepal have trained manpower for running these operations. Most of the qualified and trained manpower is with the DDC but in decreasing number. Because of the lack of qualified manpower for the dairy industry, the obvious effects have been observed in low quality of products and lack of product diversification.

Staff in management, finance and marketing should be trained in the national institutes, and qualified manpower in these faculties are not been recruited through competition from among the fresh graduates. Scholarship in India or abroad has been ceased for the higher-level manpower like B.Sc. and M. Sc. in Dairy Technology. NDDDB could make arrangement with NDDDB India/National Dairy Research Institute, India for short term tailor-made training courses and degree programs. Income tax of the dairy industries should be exempted on the amount incurred for training of manpower.

Most of the dairy industries except DDC shown reluctances to provide the data on the human resources they have and their qualification. However, attempt was made to collect the data. Table 3.10 below explains that out of total technical human resource, 91.79 percent was with large dairies who are handling around 67,000 litre milk in a day. While medium dairies absorbed 4.59 percent. On the other hand small dairies and Cheese are absorbing 2.54 percent and 1.09 percent respectively. Small dairy on an average are handling 2062 litre milk in a day. Out of technical human resource, 92.63 percent were undergraduates and 7.37 percent were

graduates. Among the graduates they were either from Dairy Technology, Food Technology, Veterinary or Agriculture science while undergraduates were JT/As in agriculture or livestock.

Table: 3.10 Academic Qualifications of the Human Resource Available in Dairy Industries

Degree	Dairy Type								Total
	Small		Medium		Large		Cheese		
	No	%	No	%	No	%	No	%	No
M.Sc. Dairy Technology	0	0.00	0	0.00	2???	0.24		0.00	2
B.SC. Dairy Technology	0	0.00	0	0.00	25	3.02		0.00	25
MSc. Food Technology	1	0.12	1	0.12	9	1.09	1	0.12	12
B.Sc. Food Technology	3	0.36	9	1.09	10	1.21		0.00	22
JT/As	17	2.05	28	3.38	714	86.23	8	0.97	767
Total	21	2.54	38	4.59	760	91.79	9	1.09	828
MBA/M.com	5	0.29	12	0.69	27	1.55	2	0.12	46
MPA	4	0.23	8	0.46	12	0.69	0	0.00	24
MA (Eco)	2	0.12	19	1.09	34	1.96	15	0.86	70
BBA	5	0.29	37	2.13	15	0.86	11	0.63	68
BBS/B.Com	8	0.46	49	2.82	48	2.76	2	0.12	107
Plus 2/IA	53	3.05	125	7.20	65	3.74	8	0.46	251
SLC	201	11.57	189	10.88	102	5.87	48	2.76	540
Below SLC	309	17.79	168	9.67	97	5.58	57	3.28	631
Total	587	33.79	607	34.95	400	23.03	143	8.23	1737
Grand Total	608	23.70	645	25.15	1160	45.22	152	5.93	2565
Source: Field Survey, 2019									

Source: Field Survey, 2019

Most of the dairy industries shown reluctances to provide the data on the trained human resources they have and training attended. However, attempt was made to collect the data. Table 3.11 shows that out of the total of technical human resource 26.45 percent was trained, whereas 13.53 percent of the non-technical human resource was trained. This clearly showed that more than 80 percent human resources in dairy industry are not trained.

Table: 3.11 Trained Human Resource in the Dairy Industries

Type of Dairy	Technical			Non-Technical			Total		
	Total	Trained	% Trained	Total	Trained	% Trained	Total Staff	Trained Staff	% Trained
Small	21	8	38.1	587	47	8.01	608	55	9.05
Medium	38	15	39.47	607	68	11.2	645	83	12.87
Large	760	189	24.87	400	109	27.25	1160	298	25.69
Cheese	9	7	77.78	143	11	7.69	152	18	11.84

Total	828	219	26.45	1737	235	13.53	2565	454	17.70
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Source: Field Survey, 2019

3.5 Procedure of Product Production in Large, Medium and Small Dairy Industries

Most of the dairy industries shown reluctances to show and provide SOP data. However, attempt was made to collect the data. Table 3.12 below elaborate on the status of following GMP and SoP by the dairy industries. It was found that only 39.6 percent dairy industries follow GMP and 29.7 percent follow SoP. By type of dairy industries, 37.1 percent small dairy industries follow GMP and 11.29 percent follow SOP. Similarly, 30.77 percent medium dairy follow GMP and 46.15 percent follow SOP and cent percent large industries follow GMP and SOP. On the other hand, 60 percent cheese industries follow GMP and 80 percent follow SOP. On request to show the SOP, entire industries deny.

Table: 3.12 SoP and GMP Following by the Dairy Industries

Type of Dairy	Total Number Surveyed	GMP Followed by		SOP Followed by	
		No	%	No	%
Small	55	34	37.10	7	11.29
Medium	26	8	30.77	12	46.15
Large	3	3	100.00	3	100.00
Cheese	17	6	60.00	8	80.00
Total	101	40	39.60	30	29.70

Source: Field Survey, 2019

Table 3.13 below mentioned on the reason for not following the GMP process. Based on the information provided by the dairy industries, 32.81 percent said they don't have skilled manpower, 25 percent said there is no training facility, 17.19 percent said rate to pay for the skilled manpower is high and 20.31 percent said they are in process of following GMP.

Table: 3.13 Reasons for not Following the GMP Process

Type of Dairy	Reasons with No and % of Responses Responded										Total
	No skill manpower available		Need to pay high		No training facility		High Staff turnover		In process of GMP		
	No	%	No	%	No	%	No	%	No	%	No
Small	14	36.84	6	15.79	5	13.16	2	5.26	8	21.05	38
Medium	4	23.53	1	5.88	7	41.18	0	0.00	5	29.41	17
Large	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Cheese	3	33.33	4	44.44	4	44.44	1	11.11	0	0.00	9
Total	21	32.81	11	17.19	16	25.00	3	4.69	13	20.31	64
Source: Field Survey, 2019											

Table 3.14 below specifies on the reasons for not-following the SOP by the dairy industries. It was said 4.48 percent dairy industries that they have no skill manpower, 42.25 percent said they cannot fulfill the demand and 11.27 percent dairy industries said they cannot afford the rate of skilled manpower.

Table: 3.14 Reasons for not Following the SOP

Dairy Industries	Reasons with No and % of Responses Responded							
	No skill manpower available		Cannot fulfill the demand		Cannot offer the rate of Expert		Total	
	No	%	No	%	No	%	No	%
Small	22	45.83	23	47.92	3	6.25	48	67.61
Medium	5	35.71	5	35.71	4	28.57	14	19.72
Large	0		0		0		0	0.00
Cheese	6	66.67	2	22.22	1	11.11	9	12.68
Total	33	46.48	30	42.25	8	11.27	71	100.00

Source: Field Survey, 2019

3.6 Administration of the Dairy Industries

Table 3.15 below explains on the administrative process in the dairy industries. It was found that only 38.61 percent provided Terms of Reference (ToR) to the staffs, 41.58 percent provided appointment letter, 34.65 percent had overtime provision, 45.54 percent had sick leave provision and 60.4 percent had delivery leave facility. Capacity development provision was in 49.5 percent, gratuity was provisioned by 20.79 percent and staff upgrading system was prevailing in 48.51 percent dairy industries. Internal audit was practiced by 56.44 percent and external audit by 95.05 percent dairy industries.

Table: 3.15 Staff Administrative Provisions in Dairy Industries

Provisions for Staff	Type of Dairy								
	Small (N= 55)		Medium (n=26)		Large (N= 3)		Cheese (N=17)		Total (N=101)
	Reported Yes (have)		Reported Yes (have)		Reported Yes (have)		Reported Yes (have)		Reported Yes (have)
	No	%	No	%	No	%	No	%	%
Terms of Reference	19	34.55	9	34.62	3	100.00	8	47.06	38.61
Appointment Letter	20	36.36	12	46.15	2	66.67	8	47.06	41.58
Overtime	14	25.45	13	50.00	3	100.00	4	23.53	34.65

Provisions for Staff	Type of Dairy								
	Small (N= 55)		Medium (n=26)		Large (N= 3)		Cheese (N=17)		Total (N=101)
	Reported Yes (have)		Reported Yes (have)		Reported Yes (have)		Reported Yes (have)		Reported Yes (have)
	No	%	No	%	No	%	No	%	%
Provision									
Sick Leave	20	36.36	14	53.85	3	100.00	8	47.06	45.54
Causal Leave	4	7.27	10	38.46	3	100.00	8	47.06	38.61
Festival Leave	4	7.27	8	30.77	2	66.67	8	47.06	21.78
Delivery Leave	9	16.36	14	53.85	2	66.67	10	58.82	60.40
Perk Provision	11	20.00	4	15.38	0	0.00	0	0.00	14.85
Capacity Development Training	28	50.91	11	42.31	2	66.67	5	29.41	49.50
Staff Upgrading System	26	47.27	13	50.00	3	100.00	7	41.18	48.51
Pension	0	0.00	0	0.00	1	33.33	0	0.00	0.99
Gratuity	6	10.91	6	23.08	1	33.33	8	47.06	20.79
Citizen Investment Fund	2	3.64	2	7.69	0	0.00	6	35.29	9.90
Provident fund	10	18.18	8	30.77	3	100.00	8	47.06	28.71
Source: Field Survey, 2019									

It has been found that majority of dairy industries in Nepal are following minimum practices for effective internal control system. The dairy industries has set up of financial sections for account keeping, budget receive & payment and also projection of finance for expansion and extension of their business. However, most of them are following government system of accounting. Internal audit is not properly followed by the small dairies.

Table: 3.16 Internal Control Systems in Dairy Industries

Particulars	Type of Dairy							
	Small (N= 55)		Medium (n=26)		Large (N= 3)		Cheese (N=17)	
	Reported Yes (have)		Reported Yes (have)		Reported Yes (have)		Reported Yes (have)	
	No	%	No	%	No	%	No	%

Book Keeping	51	92.73	25	96.15	3	100	14	82.35	93	92.08
Single Entry	24	43.64	6	23.08	0	0	13	76.47	43	42.57
Double Entry	26	47.27	19	73.08	3	100	1	5.88	49	48.51
Internal Audit	25	45.45	19	73.08	3	100	10	58.82	57	56.44
External Audit	53	96.36	26	100	3	100	14	82.35	96	95.05
Source: Field Survey, 2019										

Table 3.16 shows that out of the total 92 percent dairies have been practicing book keeping system i.e. still 8 percent are missing to follow even a minimum requirement of a formal organization. Nearly 49 percent are practicing double entry and 43 percent are following single entry system. Double entry system is recommended for a good accounting system in Nepal. However, it is good that 95 percent dairies are doing their final/external audit regularly.



Photo: Nawa Ratna Krishi Pashupalan Kendra Pvt. Ltd. Barbote, Ilam

CHAPTER 4: PROBLEMS and OPPORTUNITIES

4.1 Problems Associated with the Human Resources in the Dairy Industries

There were different problems associated with human resources in the dairy industries in Nepal. The common problems are highlighted as follows:

- Lack of skilled technical manpower (**Specialized** dairy technologists, mid-level and lower level technical manpower)
- Not appropriate deployment of manpower (agriculturist, veterinarians, animal scientists were working as dairy experts)
- Insufficient training institutions in the country to produce skilled manpower in dairy sector
- Reliance on foreign technicians especially on operation and maintenance
- Industries lacks well documented marketing strategy
- Institutional coordination and communication gap between the academic and/or training institutions and the dairy industries
- Insufficient finance and subsidized finance
- Marketing of the loose milk everywhere
- Reluctance to offer training on product processing, operation and maintenance of dairy machinery and equipment, equipment standardization/ calibration for uniformity in quality check.
- Overlook the importance of Good Manufacturing Practice (GMP), Code of Conduct (CoC), Code of Practice (CoP).
- No well documented SOP especially by the small dairies (experience utilize)
- Lack of motivational schemes.
- No proper monitoring system on the quality assurance

4.2 SWOT Analysis

SWOT analysis is used to identify and categories significant internal factors (i.e. strengths and weaknesses) and external factors (i.e. opportunities and threats) faced by the organization. It provides information that is helpful in matching the firms' resources and capabilities to the competitive environment in which it operates and is therefore an important contribution to the strategic planning process. It cannot be viewed as a static method with emphasis solely on its output, but also used as a dynamic part of the management and business development process.

SWOT analysis involves the collection and portrayal of information about internal and external factors that have, or may have, an impact on the evolution of an organization or business. It generally provides a list of an organization's Strengths and Weaknesses as indicated by an analysis of its resources and capabilities, plus a list of the Threats and Opportunities identified by an analysis of its environment. Strategic logic requires that the future pattern of actions to be taken should match strengths with opportunities ward off threats and seek to overcome weaknesses.

Strength

- Well organized dairy industries
- Have good physical facility
- Farmers are self-dependent
- Have indigenous knowledge and skill for milk production among the farmers
- Fully equipped dairy processing plants are installed
- Following good technology in dairy product processing
- Established network for milk collection, processing and marketing
- Good quality products produced
- Have capacity to produce varieties of dairy product
- Urbanization, burgeoning population, raise in per-capita income, change in food habit and increased consumption of dairy products
- Regular source of income
- Have developed physical facilities and infrastructures
- Government's priority dairy production and processing

Weakness

- Seasonal variation in milk production
- No good facility in processing plant
- Lack of trained manpower
- High turnover of the manpower
- No training facility
- Poor cold chain facility
- Poor technology transfer
- Poor promotional activities
- Poor quality raw milk in the market
- Unhealthy competition among the dairy farmers and processors
- Poor availability of high-quality dairy animals/ no good resource centers
- Poor road network to the milk production site
- Poor marketing and less investment in promotional activities
- Unable to convince the consumers that the processed milk should be taken
- Poor laboratory facility
- Poor extension services for the farmers
- Small scale dairy animal farming
- Disease outbreak and high use of antibiotics and milk collected from diseased animals also

Opportunity

- High demand for milk and milk products as varieties of milk products available in the market
- Government's priority
- Good opportunity for local level employment generation
- Development partner's priority in dairy sector
- Health conscious consumers
- Increased vegetarian population
- Increased tourist flow at different locations
- Good tools for transforming cooperatives to commercial orientation
- Excellent business for trade balance between urban and rural areas
- High demand of Nepalese cheese and chhurpi in international market
- Foreign investors are extending eyes
- Liberalized policy in dairy sector

Threat/Challenge

- National dairy policy is not clear
- No scientific pricing policy- price fixed by DDC
- WTO member and free entrance of foreign products
- Poor trust on the processed milk among the consumers but trust on loose milk
- The liberalization of the dairy industry is likely to be exploited by multinationals. They will be interested in manufacturing value added products. It will create milk shortage in the country adversely affecting the consumers.

CHAPTER 5: HUMAN RESOURCE REQUIRED

5.1 Human Resource Required for Effective and Efficient Operation of Large, Medium and Small Dairy Industries

Human resource planning includes determination of number of personnel along with their qualification. There is no fixed guideline for calculating number of personnel. However, understanding the functional requirement and Organizational Structure along with other influencing factors as detailed in the paragraph will be of immense help. Below examples illustrate major dairy functions.

a) Milk Collection: Bulk reception may require one operator and one helper, whereas can reception would require 9 to 14 persons depending upon level of automation. Suitably trained personnel are required for skillful operations like grading, weighing and sampling. Straight through or rotary washer requires at least two persons, whereas one worker each is required for can scrubber, steam block and inspection of can condition and cleaning status. One operator is separately needed for looking after operation of general cleaning & milk movement from dump vat to storage tank.

b) Milk Processing: To carry out milk processing one operator with one **dairyman dairy technologist** is required. These dairy personnel may also look after the work of CIP cleaning work.

c) Milk Packing: Milk packing machine needs one person per head. Two persons for crate washer, two people each for crate loading and unloading and two people for crate stacking in cold room are optimum. One extra person for cleaning and pouch weight monitoring is desirable.

d) Creamery Section: One operator per shift for butter manufacture per machine, two workers for butter movement to ghee section and two persons for ghee making are required. One skilled packing machine operator would be desirable in each shift.

e) Indigenous Products: The manpower requirement depends on level of automation and layout of production facilities including product mix and product technology.

f) Powder Plant: Plant operations including bagging and arranging bagging material required two to three persons per shift in a fully automatic plant. However, at low level of automation the manpower requirement will be more.

g) Utility Section: Under the trained and qualified sectional head, there would be supervisors for looking after sub-sections like boiler, refrigeration, mechanical and electrical maintenance. Boiler section requires a boiler operator with one attendant, similarly refrigeration section need one or two operators per shift depending upon plant layout and number of machines in operation. One electrician, fitter and welder per shift along with helper is considered optimum for maintaining smooth operations.

5.2 Factors Affecting Human Resource Deployment

As per Key Informants, there are numerous factors that influence manpower requirements of dairy plants. In manpower deployment, two important aspects, namely, skill and strength (number) are of great consideration. Most significant factors are being discussed below:

i) Capacity and Size of Dairy Plant: The installed capacity and its expected utilization in the future have considerable influence on workmen deployment. Sometimes due to size and shape of plant and its technicality more workmen are required in spite of low plant capacity utilization.

ii) Products and Product Technology: Pack-sizes and complexity of production are the two highly influencing factors. Liquid milk is sold both in retail pack size and bulk (Cans / tankers etc.). Milk products are also manufactured in retail packs and in bulk depending upon the marketing requirement. It is observed that retail-packing operations demand higher number of personnel as compared to bulk packs. Dairy products are as simple as market milks and as complex as cheese and accordingly, the product technology has influence on the manpower requirement. Products that are manufactured through automatic plant machinery require less manpower, whereas indigenous technology-based products using human art and skill require more manpower.

iii) Level of Automation: Level of plant automation varies greatly from plant to plant and function to function. Old and traditional plants have less automation compared to modern plants. Automation requires less manpower and result in better product hygiene. In automated plants labor requiring operations like product shifting, transportation and filling are carried out through conveyor, pumps and suitable equipment. In the modern dairy plants, monitoring of plant operations and process parameters is done through sensors and controls. In Nepal, most of the dairies are found partial or manual.

iv) Equipment Requirements: Equipment features such as requirements relating to material loading/unloading and cleaning process has influence over manpower requirement.

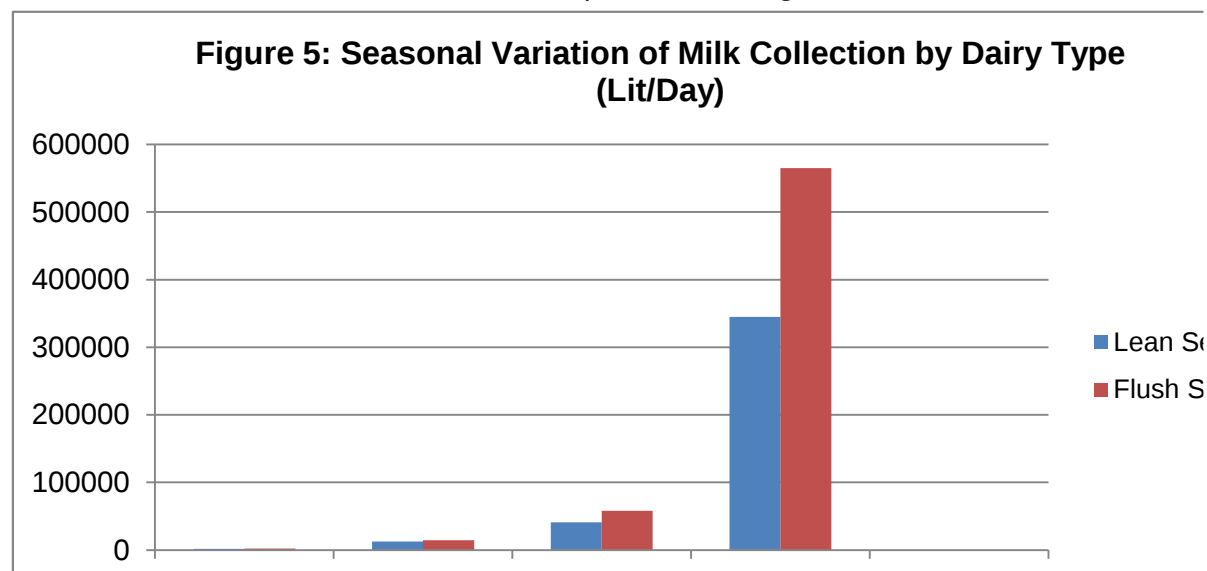
v) Number of Shift Operation: In general, a complete operation of dairy is done in three shifts, but in several cases, it is also done in one or two shifts. Sometimes number of shifts is increased due to constraint of milk availability, process / packing machine and/or storage facilities. In such cases, bottlenecks decrease throughput of plant and increase working hours. In dairy, normally milk procurement and marketing is done in two shifts i.e. morning or day shift and evening or night shift, but in most of the cases due to continuity of operation, the operations are divided into three shifts viz; 1st, 2nd and 3rd shift (each of 8 hours). Therefore, these factors must be considered while planning manpower requirement.

vi) Legal Provision: Labour welfare department enforce guidelines with respect to working and rest hour / period to prevent harassment of personnel. While planning manpower requirement these guidelines and other state legislation should be considered in judicious manner.

vii) Seasonal Variations: Dairy business has a great influence of seasons and festivals. During summer month, milk procurement goes down, whereas demand for milk and milk products in market goes up. Similar variations are also seen during festival period. The above changing

situations do influence manpower requirement to meet operational compulsions. To deal with such trends, dairies need to hire or reduce workers on temporary basis. The employment or curtailment of worker is possible only for un-skilled category, whereas the same is normally not practicable for jobs requiring skilled personnel.

In Nepal it is considered that the flush season starts from Bhadra and end at Fagun and the rest period (Chaitra to Shrawon) in lean season. The survey data shows that there is significant gap in milk collection between the seasons. Comparatively the large dairies are highly affected by season compared to others. Due to this reason the dairies have limited scope of year round human resource planning and facing difficulties in calculating exact number of human resource need. Seasonal variation in milk collection is presented in Figure 5.



viii) Centralized or Decentralized Operations: Sometimes dairies have raw milk reception and chilling operation away from the main processing plant. These plants receive only chilled raw milk in bulk through tankers. In such situation manpower requirement reduces to a great extent due to absence of can milk reception, sampling, testing and cleaning operation. Similarly, provision of bulk storage does influence manpower requirement.

ix) Degree of Contractual Arrangement: Some of the dairy plants cope up increased workload through contractual job arrangement. Such arrangements are done for cleaning of cans and crates, product packing and product shifting/movement. Sub-contract of production, packing and transportation work has become more common. Such arrangements drastically reduce extra and regular workers' requirement.

5.3 Manpower Planning for Shift

Manpower planning of shift operations is determined in two situations:

a) As an integral part of planning to determine and select manpower for dairy, based on shift operation. In this case, the factors discussed in paragraph needs to be assessed for meeting requirements of shift-operations, monitoring, accounting, quality analysis and management.

b) Second situation of manpower planning for shift arises in the event of revising shift strength on account of change in production schedule, changing of personnel in the shift and shift rotation. Planning process in this case would include assessment of manpower availability with respect to skill and strength, products and production schedule, weekly offs, leave and other holidays, plant operations and work to fulfill the production schedule. In turn, on totaling manpower requirements of all the shifts, we get overall manpower requirement of dairy plant.

5.4 Manpower Efficiency

The small dairies have high opportunity to grow better through mobilizing available manpower. They are running at about 66 percent capacity which can be increased through entrepreneurship development. This includes skill upgrading, using optimum number of manpower, periodic market assessment, quality improvement, staff motivation, follow GMP and functional internal control system.

Volume of milk handling with respect to number of staff is high in large dairies compared to small and medium. It is even high in private dairies. For example Sujal dairy on an average is handling nearly 41,000 litre fluid milk in a day by 26 staffs, whereas, the DDC Kathmandu is handling nearly 72,000 fluid milk in a day having 260 staff in total. Similarly, per staff milk handling in Hetauda dairy is around 1131 litre/day. On the other hand small dairies are using more non-technical and non-trained manpower causing low per person milk handling and some are taken as family business. They have only 9% trained manpower showing poorly skilled human resource. If their knowledge and skill could be improved thorough skill training they can perform better.

There is again variance among the dairies. For example, average daily milk handling per person in Pawan dairy in Chitwon is 1281 litre whereas it is 1123 in Shivaganga dairy in Rupendehi. This figure indicates high efficiency of large dairies compared to others. But, there is high possibility of improving this situation in small dairy industries. This can be done through upgraded manpower efficiency through providing functional skill training to the available manpower. Again, small dairies are less affected by the seasonal variation in milk collection as they are local and have specific dairy farmers booked.

Table 3.17: Few Case Example of Manpower use in Milk Handling

Name of the Dairy	Milk handling	Milk handling	Manpower Available		
	Lit/Year	Lit/Day	Technical	Non-Technical	Total
Shivaganga Dairy	410000	1123	2	17	19
Khaptad Dairy Industry	455000	1247	3	17	20
Ujjwal Dairy	625000	1712	4	7	11
Pawan Dairy	467600	1281	1	6	7
Janakpur Milk Supply Scheme	831829	2279	16	4	20
Total of Small Dairy	2789429	7642	26	51	77
Kamdhenu	4079799	11178	12	4	16

Name of the Dairy	Milk handling	Milk handling	Manpower Available		
	Lit/Year	Lit/Day	Technical	Non-Technical	Total
Dugdha Bikas Saharaki					
Nepal dairy	4200000	11507	6	39	45
Naba Pratibha prabhat Dairy	5700000	15616	13	42	55
Hetauda dairy	7431400	20360	2	16	18
Biratnagar Milk Supply Scheme	10247640	28076	109	30	139
Total of Medium	27579040	75559	130	127	257
Sujal Dairy	14728187	40351	15	11	26
Kathmandu Milk Supply Scheme	26016261	71277	193	67	260
Total of Large	40744448	111629	208	78	286

CHAPTER- 6: CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Dairy Industries are of different type and capacity and producing different dairy products. Among the dairy products most common products were the fluid standard milk, dahi, paneer, ice-cream, butter, ghee, cheese, sweets, chhurpi, SMP and Khowa. Large and to greater extent medium dairies are utilizing the proper human resource in product production and quality control, but the small dairies are not in condition to operate properly.

The Nepalese dairy industry severely lacks skilled manpower as well as organized and recognized education for the sector. Dairy processing is a complex task and it needs specialized manpower like dairy technologists, and dairy industry operators with medium level education in milk handling, processing, hygiene, equipment operation, product manufacturing, quality control and equipment maintenance. In addition, professionals in management, finance and marketing are also equally required. But very few existing dairies in Nepal have trained manpower for running these operations. Most of the qualified and trained manpower is with the DDC but in decreasing number. Because of the lack of qualified manpower for the dairy industry, the obvious effects have been observed in low quality of products and lack of product diversification.

The dairies are operating at 50.44 percent of its installed capacity. Table 6.1 describes on the installed capacity, current processing and currently available & recommended manpower.

Table 6.1: Dairy Capacity Utilization and Manpower Recommended

Dairy Type	Installed Capacity (Lits)/day	Current Processing (Lits/day)	% Utilization	Current Manpower available	Recommended Manpower
Small	191400	117970	61.64	11	11-27
Medium	553000	216000	39.06	25	27-65
Large	300000	200000	66.67	387	68-107
Cheese	24000	4980	20.75	9	6-13
Total	1068400	538950	50.44		

(source : if there is source for recommended manpower pl incorporate it)

The middle and lower level technicians should be provided with adequate training within the national institutes. Similarly, staff in management, finance and marketing should be trained in the national institutes, and qualified manpower in these faculties should be hired through competition from among the fresh graduates. Scholarship in India or abroad should be arranged for the higher-level manpower like B.Sc. and M. Sc. in Dairy Technology. NDDDB could make arrangement with NDDDB India/National Dairy Research Institute, India for short term tailor-made training courses and degree programs. Income tax of the dairy industries should be exempted on the amount incurred for training of manpower.

There is huge gap between the trained and qualified human resource for the operation of dairy industries. Dairy industries are just operating as the family enterprise using traditional methods. Most of the small dairies were not having SOP and not following the GMP and in many instances, they were not well informed on its gravity. However, medium and large dairies are using SOP and GMP. It is very difficult to gauge the quality of dairy products as almost all of the small dairies and some medium dairies also do not have proper laboratory facility to test the quality. Until now the milk price has been determined by the market and quality-based milk pricing system has not been used that could be the reason for not getting the quality milk in the market.

6.2 Recommendations

6.2.1 Recommendations by Dairy Type

6.2.1.1 Promotional

1. Small Dairy:

Most of the small dairies are operated as a family business and reported that they are not in a position to afford skill human resources. In this context they are recommended to do the following activities. NDDDB is recommended to provide technical support including facilitation, coordination and networking among the stakeholders.

- (1) Capacitate the available human resources through functional training, on the job training and learning sharing.
- (2) Currently available manpower (average 11 no per dairy) is enough for the current volume of milk handling (2062 lit/day), but they need skill training **with quality enhancement**.
- (3) Dairies can outsource the technical staff and use part time services based on product diversification and slightly increasing the volume of handling.
- (4) Entrepreneurship development is needed and it is possible through NDDDB technical support especially for the operationalization of GMP and SoP.

2. Medium and Large Dairy:

- (1) Unavailability of trained and skilled (**specialized dairy technologist**) human resource is a common issue of the medium and large dairies (except DDC) thus the follows are common recommendations for medium and large dairy.
 - Upgrade technical skills and update their employees with new technologies at different sections, functions and the dairy products. They can (i) Coordinate between with dairy industries and the training institutions; (ii) Develop training curriculum based on **training need assessment**; (iii) Cost sharing for training, orientation and exposure of their

employees; (iv) Sign MoU with academic institutions and training institutes to bridge human resource gap; (v) Lobby the government through NDDB to offer scholarships abroad for producing higher level manpower (graduates and above).

(2) Increase staff motivation and efficiency: **Formation of Quality control circle**, Organize team building workshops, refreshment and short reflections among the employees and the management.

(3) Marketing Strategy not in place for each of the dairies, and thus the dairies especially the medium and large are recommended the followings:

- Formalize the data gathering process through periodic milk market study,
- Periodic update of the data related to production, processing and marketing,
- Publish quarterly market report, monitor and updates on: market price information, trade & production and tax variations,
- Quick assessment on consumer behavior and level of satisfaction,
- Exposure visits.

NDDB is recommended to organize orientation to entrepreneurs on marketing principles and facilitate dairy industries the marketing strategy development process.

Based on the marketing strategy the private dairies are recommended to hire the services of dairy marketing experts.

(3) Seasonal variation in milk collection: The large dairies are heavily affected by the seasonal variation in fluid milk collection (see figure 1). Thus the dairies are recommended for their efforts to reduce the seasonal variation in milk collection. Some of the measures would be:

- Develop own milk pocket area,
- Provide dairy extension services for steady milk production; replacing buffalo by cross-breed cows,
- Develop and follow code of conduct for fair deal with the milk collectors.

4. Cheese Industry:

The Cheese industries were reporting that they are neglected especially for Yak cheese, in terms of promotional activities and incentives to the farmers. Production and marketing of cheese was found facing difficulty in terms of quality, storing, transportation and sales. But, still there is high possibility of enlarged demand especially for Yak Cheese for this the followings are recommended:

- It is reported that the training provided to Cheese production and marketing is less focused on new technologies. And again there is high drop-out on the limitedly trained manpower. Thus it is recommended to capacitate the available human resources through functional training **with quality improvement**, on the job training and cross-learning with modern technologies.
- Cheese industries can outsource the technical staff and use part time services based on product diversification and slightly increasing the volume of handling.

- To demonstrate Yak cheese as a specialty product of Nepal the cheese producers need to be thoroughly imparted with newly developed technologies and technical know-how of cheese production. The Cheese industries are recommended to focus on mobilizing skilled manpower and produce a quality product.
- NDDDB is recommended to provide technical support and capacity enhancement of the cheese industries in promotional activities including product packaging, branding, develop market outlets and standardized pricing and quality control.
- Entrepreneurship development is needed and it is possible through NDDDB technical support especially for GMP.
- DLS is recommended to provide extension support services.

6.2.1.2 Human Resource Requirement

It is difficult to find any thumb rule to project exact number of manpower for any type of dairy industry. However, the number of technician, maintenance & operators, administrative, marketing and other type of manpower depends on capacity of the dairy plant, level of automation, volume of fluid milk handling, number and volume of milk products like ice-cream, dahi, paneer, butter, cheese, SMP and others. Based on the research findings and knowledge of the experts minimum requirement of manpower for different type of dairy has been projected.

Research findings shows that the small dairies are handling 2062 litre fluid milk in a day by 11 staffs. On the other hand medium dairies on an average are handling only 8308 lit/day i.e. they are operating below the minimum level. The large dairies are handling 66,667 lit/day mobilizing 230 staff. It is found that the private sector has less manpower compared to DDC. Comparative data on available manpower and required (recommended) number is given in Table 6.1.

Table 6.2: Manpower for Dairy Industry

Sections	Manpower Type	Dairy Type							
		Available (No)				Required (No)			
		Small	Medium	Large	Cheese	Small	Medium	Large	Cheese
Milk reception	Technical	1	2	12	2	1-2	2-3	3-6	1-2
Milk Processing	Technical	1	2	12	2	1-2	2-3	3-4	1-2
Milk packaging	Technical	2	4	60	0	3-8	6-24	24-36	1-3
Creamery (Butter and Ghee)	Technical	1	2	14	1	1-2	3-6	6-8	
Maintenance	Technical	1	2	16	1	1-2	2-6	6-10	1-2
Chemical analysis	Technical	1	1	22	0	1-2	2-3	6-9	
Micro-biology	Technical	0	1	10	0	0-1	1-2	2-3	

Sections	Manpower Type	Dairy Type							
		Available (No)				Required (No)			
		Small	Medium	Large	Cheese	Small	Medium	Large	Cheese
Marketing and distribution	Others	1	1	40	1	1-2	2-5	5-12	
Personnel Administration	Others	1	2	18	1	0-1	2-3	3-4	1-2
Account/Finance	Others	1	1	16	1	1-2	2-4	4-6	
General store	Others	1	1	10	0	0-1	1-3	3-4	
Maintenance store	Others	1	2	16	1	1-2	2-3	3-5	1-2
Chilling centers				108	0				
SMP				33	0				
Total		11	25	387	9	11-27	27-65	68-107	6-13
<i>Note: This estimate is excluded of chilling center manpower. At the current situation, dairy industries normally purchase milk from privately or cooperative owned chilling centers operated by 1-2 staff</i>									

The dairy industries are recommended to operate their plants in maximum capacity of installed provision (currently they are operating at about 50 percent). This will result in decreasing the number and increasing the efficiency of available manpower.

6.2.1.3 Organogram

Figure 6: Organization Structure for Large Dairies

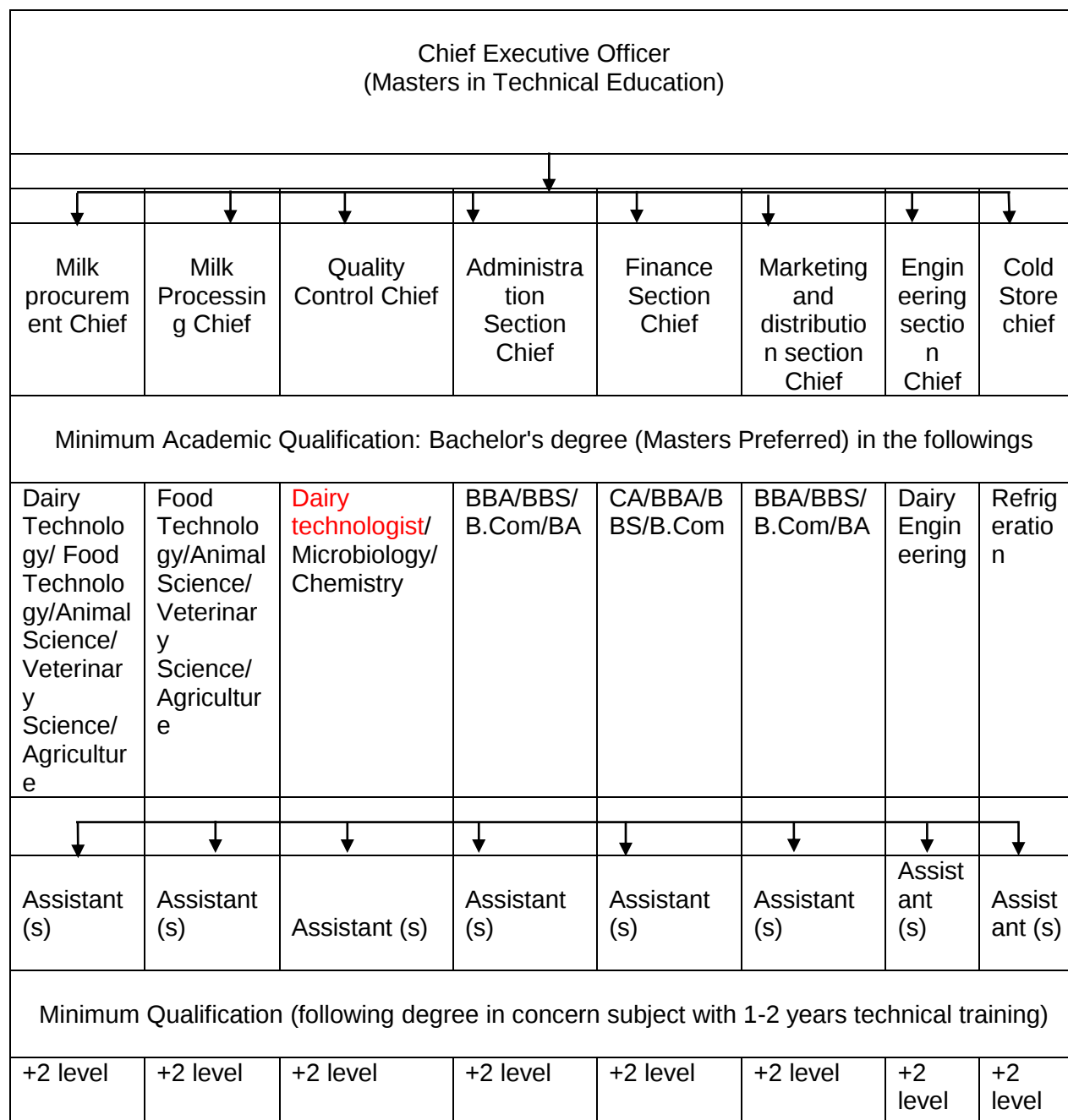


Figure 7: Organization Structure for Medium Dairies

Chief Executive Officer (Bachelors in Technical Education)							
↓							
↓	↓	↓	↓	↓	↓	↓	↓
Milk procurement Chief	Milk Processing Chief	Quality Control Chief	Administration Section Chief	Finance Section Chief	Marketing and distribution section Chief	Engineering section Chief	Cold Store chief
Minimum Academic Qualification: Bachelor's degree in							
Dairy Technology/ Food Technology/Animal Science/ Veterinary Science/ Agriculture	Food Technology/Animal Science/ Veterinary Science/ Agriculture	Dairy Technologist/ Microbiology/ Chemistry	BBA/BBS/ B.Com/BA	CA/BBA/BS/B.Com	BBA/BBS/ B.Com/BA	Dairy Engineering	Refrigeration
↓	↓	↓	↓	↓	↓	↓	↓
Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)
Minimum Qualification (following degree in concern subject with 1-2 years technical training)							
+2 level	+2 level	+2 level	+2 level	+2 level	+2 level	+2 level	+2 level

Figure 8: Organization Structure for Small Dairies

Chief Executive Officer (Bachelors in Technical Education)							
↓	↓	↓	↓	↓	↓	↓	↓
Milk procurement Chief	Milk Processing Chief	Quality Control Chief	Administration Section Chief	Finance Section Chief	Marketing and distribution section Chief	Engineering section Chief	Cold Store chief
Minimum Academic Qualification: Intermediate in the followings							
Agriculture/ Livestock/ dairy Technician (CTEVT)	Agriculture / Livestock/ dairy Technician (CTEVT)	Lab technician (CTEVT)	+ 2 in Arts	+ 2 in Management	+ 2 in Management	Technician (CTEVT)	Refrigeration Technician (CTEVT)
↓	↓	↓	↓	↓	↓	↓	↓
Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)
Minimum Qualification (following degree in concern subject with 1-2 years technical training)							
SEE/+2 level	SEE/+2 level	SEE/+2 level	SEE/+2 level	SEE/+2 level	SEE/+2 level	SEE/+2 level	SEE/+2 level

Figure 9: Organization Structure for Cheese Industry

Chief Executive Officer (Bachelors in Technical Education)				
↓	↓	↓	↓	↓
Milk procurement Chief	Milk Processing & Quality Control Chief	Administration finance Section Chief	Marketing and distribution section Chief	Engineering & Cold Store section Chief
Minimum Academic Qualification: Intermediate in the followings with 1 Year Technical Training				
Agriculture/ Livestock/dairy Technician (CTEVT) - Training in Cheese production milk procurement	Agriculture/ Livestock/dairy Technician (CTEVT)- having training in cheese lab	+ 2 in Management	+ 2 in Management	Electrical/ refrigeration Technician (CTEVT)
↓	↓	↓	↓	↓
Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)	Assistant (s)
Minimum Qualification (following degree in concern subject with 1-2 years technical training)				
SEE level	SEE level	SEE level	SEE level	SEE level

6.2.2 General Recommendations - Common for all Type of Dairies

Right person in right place is a simple phenomenon for effective and efficient operation of dairy industries. Thus the dairy industries are recommended to deploy appropriate and adequate number of human resources (both technical, managerial and administrative) in different sections they are operating

Availability of skilled (**Specialized technologist**) human resources is one of the major issues in dairy industry. This issue has been highlighted. To find out actual need and area of skill development NDDB is recommended to carry out detail Training Need Assessment (TNA). Specific training modules, curriculum, manuals and resource materials can be developed based on TNA findings.

To ensure legal enforcement, follow adequate process and supply of quality products NDDB is recommended to provide technical support to dairy industries especially the private dairies and took regular monitoring and follow-ups.

It is recommended to assess and utilize the MoU signed between NDDB Nepal and NDDB India /**NDRI Gujarat** for arranging training and degree program on dairy sectors.

Internal control system: It is recommended to all the dairies to use computerized account keeping system. Develop simple software for efficient record keeping at all type of dairies. Still nearly 37 percentage of the dairy (mostly small and cheese) are following single entry system and 43 percentage are not practicing internal audit. NDDB is recommended to develop a capacity development package for dairy industries following a quick assessment on internal control system. Motivation complete with standard operating and advancement of quality control not only in dairy products but also in operation and management.

Annexes

Annex 1: Survey Tools

(1) Dairy Plant/Industry Key Person Interview Format/Questionnaire

Study on the Assessment of Manpower involved in Dairy Industries with Special Reference to Product Development, Quality of the Dairy Products, and Managerial and Financial Performances

Study undertaken by Inlogos Pvt. Ltd. for National Dairy Development Board

Checklist for Industry Assessment

Salutation- Namaskar: We are conducting a survey on Assessment of Manpower in Dairy Industries with Special Reference to Product Development and Quality of the Dairy Products, and Managerial and Financial Performances for National Dairy Development Board. We will ask few questions that may require nearly 40 minutes time to answer. We use that information only for research purpose and not share to others. We wish for you genuine responses.

Name of the Respondent:

Date of Information Collection:

1. Introduction

101. Name of the industry/Plant.....
102. Place of registration..... 103. Date of registration.....
- 104 Address: U/R Municipality:..... Ward No..... Tole/Village:.....
- 105 PAN #.....Email.....Website.....
106. Chief of Industry..... 107. Contact Person.....
- Tel (Landline)..... Mobile.....
108. GPS Coordinates (Longitude)..... GPS Coordinates (Latitude).....
109. Installed processing capacity (Lits/day)..... Currently processing (Lits/day).....
110. Number of shift operation:
a) Only one b) Two c) Three d) Four e) Five or more
111. Automation of the processing plant
a) Fully automatic b) Semi-Automatic c) Manual d) Others (Specify.....)
112. Pasteurization methods
a) Thermization b) Batch pasteurization c) High Temperature Short Time (HTST)
d) Ultra High Temperature (UHT)
113. Dairy products being produced and quantity

Dairy products production	Installed provision	Current production	Production technology (Mention)	Use of HR for			
				Technical Product Development	Technical Quality Improvement	Others Product Development	Others Quality Improvement
Fluid milk (Lits)							
Dahi/yoghurt (Lits)							
Paneer (Kg)							
Butter (Kg)							

Dairy products production	Installed provision	Current production	Production technology (Mention)	Use of HR for			
				Technical Product Development	Technical Quality Improvement	Others Product Development	Others Quality Improvement
Ghee (Kg)							
Cheese (Kg)							
Chhurpi (kg)							
SMP (Kg)							
Sweets (kg)							
Ice-cream (Lits)							
Other products (list)							

2. Functional requirement of the dairy plant

201. Human resource management Number of staffs

Type	Permanent	Temporary	Contract	Wage	Part-time	Others (mention)	Remarks
Technical							
Others							

202. How you decide and plan the number and type of staff required

- a) Demand of own dairy products b) SWOT analysis c) Organization Development Study
d) Efficiency e) Others (Specify.....)

203. What is your human resource selection process?

- a) Written and oral examination b) Oral examination/interview c) Head hunting
d) Others (Specify.....)

204. Number of staffs in different sections

SN	Particulars	Total No of Staff Required		Available Staff (No)		Academic qualification		Trained Staff	
		Techni cal	Other s	Techni cal	Other s	Techni cal staff	Other s	Techni cal	Other s
1	Sections in dairy plants								
1.1	Milk reception Section with accessories								
1.2	Milk pasteurization section (.....litr/hrs)								
1.3	Homogenization section								
1.4	Milk storage section								
1.5	Milk Packing section								
1.6	Automatic bottle filling section								
1.7	Manual filling section								
1.8	Milk cold room								

SN	Particulars	Total No of Staff Required		Available Staff (No)		Academic qualification		Trained Staff	
		Technical	Others	Technical	Others	Technical staff	Others	Technical	Others
1.9	Clean in Place (CIP)								
1.10	IBT section								
1.11	Boiler section								
1.12	Air Compressor section								
1.13	Main Electrical control section								
1.14	Quality control section								
2	Management department								
2.1	Marketing and distribution								
2.2	Public-DDC relation and promotion								
2.3	Administration								
2.4	Finance								
2.5	Procurement								

205. Staff Administration

SN	Provisions			Elaborate		
1	Terms of Reference	Yes	No			
2	Appointment letter	Yes	No			
3	Duty hour					
4	Overtime provision	Yes	No			
5	Annual leave	Yes	No	Days.....		
6	Sick leave	Yes	No	Days....		
7	Casual leave	Yes	No	Days...		
8	Festival leave	Yes	No	Days...		
9	Delivery leave	Yes	No	Days...		
10	Other leave (if any)					
11	Perks provisions	Yes	No	Clarify:		
11						
12	Staff capacity development (training)	Yes	No	Technical (training name)	Financial (training name)	Management (training name)
13	Staff upgrading system	Yes	No	How often? Mention the system:		
14	Retirement facility	Yes	No	Pension Gratuity		
15	Citizen Investment Fund	Yes	No	Amount.....		
	Employee provident fund	Yes	No			

206. Financial management

SN	Provisions				
1	Book keeping system	Yes	No	Single	Double
2	Use of accounting software	Yes	No	Software name:	
3	Provision of internal audit	Yes	No	Frequency:	

4	Provision of external audit	Yes	No	Frequency:
5				
6				
7				

207. Organizational structure of the dairy plant (Sketch the map)

208. Seasonal Variations

Particulars	Average real operation (Lits/month) FY 2074/075										
	Baisakh	Jestha	Asar	Shawn	Bhadra	Kartik	Magsir	Poush	Magh	Fagun	Chait
Milk collection											
Milk processing											
Packaging of Milk											
Milk Products											
Daily operation hr											

209. Production and Sales by Season

Dairy products production (avg/month)	Lean season (Magh-Asar)	Flush Season (Shawn-Poush)	Sales Lean season	Sales Flush Season
Fluid milk (Lits)				
Dahi/yoghurt (Lits)				
Paneer (Kg)				
Butter (Kg)				
Ghee (Kg)				
Cheese (Kg)				
Chhurpi (kg)				
SMP (Kg)				
Ice-cream (Lits)				
Sweets (kg)				
Other products (list)				

3. Technical operation of dairy plant and machinery including utilities

301. Do you have business plan?

- a) Yes b) No

302. From where you get finance?

- a) Own capital b) Bank loan c) Loan and equity d) Grant

303. From where you purchase machine and equipment for plant installation?

- a) Nepal b) India c) Abroad

304. From where you received technical support for installation of processing plant

- a) Nepal b) India c) Abroad

4. Quality control of milk and milk products (Pasteurized milk, Yoghurt, Paneer, Ice-cream, Ghee, Cheese) including chemical and microbiological analysis

401. Are you following Good Manufacturing Practices (GMP) to cover provisions made by government of Nepal?

- a) Yes b) No c) Don't know on GMP

402. If no, give reasons

- a) No skilled manpower available b) Cannot fulfill the demand of skilled manpower
c) Cannot offer the cost for staff training d) Non availability of training institution
e) Staff turnover rate is high f) Others (Specify.....)

403. Do you have Standard Operating Procedure (SOP) for production of milk products?

- a) Yes (Verify by document) b) No c) Don't know

404. What is your SOP for products you produced? please answer the following table

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
1.1 Raw milk reception and quality testing							
Milk reception							
Temperature							
Milk sample collection							
Sensory test							
Alcohol test							
Acidity test							
Fat %							
SNF %							
Protein %							
Lactose %							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Antibiotics							
Adulteration							
Plate count							
MBRT							
Coliform							
1.2 Pasteurization							
Standardization							
SMP							
Butter oil							
Homogenization							
Filling/bottling							
1.3 Pasteurized milk testing/quality							
Sensory test							
Acidity test							
Fat test							
SNF test							
Phosphatase test							
Coliform count test							
TPC at 30 C							
MBRT test							
Milk packaging							
Total pouches produced							
% leaking immediately							
Leaking after 12 hours							
2. 1 Dahi Production							
Milk pasteurization							
Milk homogenization							
Milk standardization							
Fat %							
SNF %							
Protein %							
Lactose %							
SMP %							
Sugar %							
Culture							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Preservative							
Colour							
Flavour							
Temperature (°C)							
Incubation (°C)							
Incubation time (hr)							
2.2 Final product quality testing							
Sensory test							
Fat %							
Total Solid %							
Acidity %							
Coliform count test							
Yeast/Mold count							
3.1 Cheese Production							
Standardization							
FAT %							
SNF %							
Acidity %							
Pasteurization							
Homogenization							
Lactic acid							
Rennet							
Salt %							
Preservative							
Colour							
Flavour							
Moulding							
Hardening							
Ripening							
Storage							
Temperature (°C)							
3.2 Final product quality test							
Sensory test							
Fat %							
Moisture test							
Salt content %							
pH							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Protein %							
Coliform count test							
Yeast/Mold count							
4.1 Paneer Production							
Milk Pasteurization							
Milk Standardization							
Fat							
SNF							
Acidity							
Homogenization							
Lactic acid							
Preservative							
Colour							
Flavour							
Moulding							
Storage							
4.2 Final product quality test							
Sensory test							
Fat %							
Moisture%							
Acidity %							
TPC count test							
Coliform count test							
Yeast/Mold count							
5.1 Ghee Production							
Pasteurization							
Cream separation							
Churning (°c)							
Butter fat (%)							
Flavour							
Melting (°c)							
Colour							
Temperature (°c)							
Filling							
Storage							
5.2 Final product quality test							
Sensory test							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Moisture %							
FFA %							
Peroxide/ rancidity value							
RM value							
Melting point							
Vegetable fat							
Adulteration test							
Refractive Index							
Insoluble impurities							
6.1 Butter Production							
Milk sample collection							
Raw milk quality testing							
Pasteurization							
Cream separation							
Churning (°c)							
Salt (%)							
Flavour							
Colour							
Packaging (°c)							
Storage							
Temperature (°c)							
6.2 Final product quality test							
Sensory test							
Moisture %							
fat %							
Salt %							
Curd %							
Peroxide (Rancidity) value							
Acidity %							
Detection of coloring matters							
Weight of 5 packages							
Coliform count test							
Yeast/mold count test							
7.1 Ice-cream production							
Standardization							
Fat %							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
SNF %							
Protein %							
Lactose %							
Pasteurization							
Homogenization							
Cream							
Colour							
Flavour							
Sugar %							
SMP %							
Temperature (°C)							
7.2 Final product quality test							
Sensory test							
Fat %							
Total Solid %							
Acidity %							
Sucrose %							
Overrun %							
Phosphatase test							
Coliform count test							
TPC count test							
Yeast/Mold count							
8.1 Cream production							
Milk reception							
Milk sample collection							
Sensory test							
Alcohol test							
Temperature							
8.2 Final product quality test							
Sensory test							
Fat %							
Total solid %							
Acidity %							
Sucrose %							
Overrun %							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Phosphatase test							
Coliform Count test							
TPC count test							
Yeast/Mold count							
9.1 Khowa Production							
Milk reception							
Milk sample collection							
Sensory test							
Alcohol test							
Temperature							
9.2 Final product quality test							
Moisture							
Fat							
10.1 Skim Milk Powder (SMP)							
Milk reception							
Milk sample collection							
Sensory test							
Alcohol test							
Temperature							
10.2 Final product quality test							
Sensory test							
Fat test							
Moisture and total solid							
Titration acidity							
Solubility Index							
Solubility %							
Coliform count test							
TPC count test							
11.1 Sweets Production							
11.2 Final product quality test							

Particulars	When (time)	How (Method)	Where (Place, agency)	Who (Person)	How much (Qty)	Frequency / day/ month/ shift	Quality/ Remarks
Cleaning protocol							
CIP							
Manual							
Detergent used							
Personal hygiene of worker							
Sanitation of premises							
Maintenance of the machinery equipment							

Note: The respondents may answer the product production as per SOP, but for quality test need to check and fill latest quality (mention the quality of last month i.e. Magh 2075)

Verify the result and check whether following information mentioned or not?

Raw Milk Receipt:

FILE NAME: Location on your computer/company network

AUTHORED BY (Name):

LAST MODIFIED ON (Date):

EFFECTIVE DATE: Date of Approval

APPROVED BY: _____

The following individual is responsible for implementation of this SSOP and has overall authority on-site:

Name: _____ Title: _____ Date: _____

405. If no, give the reasons

- | | |
|---|--|
| a) Skilled manpower not available | b) Cannot fulfill the demand of skilled manpower |
| c) Cannot offer the cost for staff training | d) Non availability of training institution |
| e) Staff turnover rate is high | f) Others (Specify.....) |

406 Do you have facility to test following?

SN	Yes (verify by observation)	No	If no how you manage to test? please verify by document (take photo of the document)
Fat, SNF			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Protein			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Vitamin			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Antibiotics			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Bacterial count			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Adulterations test			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)
Water quality test			a) Contract with other processing plant where facility exist b) DDC c) DFTQC d) Others (Specify.....)

407. Where and how often you test the quality of your dairy products (Verify by the documents)

Dairy products	Test in own lab	DDC	DFTQC	NDDB	Other Private dairies	Others (Mention place)	Frequency	Quality remarks
Fluid milk								
Dahi/yoghurt								
Paneer								
Butter								
Ghee								
Cheese								
Chhurpi								
SMP								
Ice-cream								

Dairy products	Test in own lab	DDC	DFTQC	NDDB	Other Private dairies	Others (Mention place)	Frequency	Quality remarks
Sweets								
Other products								
Equipment calibration								

5. Material management

501. From where you procure the raw milk?

a) Local district b) Neighboring district c) Other districts (Mention the name.....)

502. Do you reconstitute the milk?

a) Yes b) No

503. If yes from where you procure the raw materials

SN	Materials	Source of purchase	Method of purchase
1	Skim Milk Powder		
2	Butter oil		
3	Others (Specify.....)		

504. Other materials purchase

SN	Materials	Source of purchase	Method of purchase
1	Sugar		
2	Rennet		
3	Flavor, assents etc.		
4	Yoghurt starter		
5	Lactic acid		
6	Laboratory chemicals		
7	Laboratory equipment		
8	Plant machine and equipment		
9	Sphere parts for replacement of		
10	Detergents for cleaning		
11	Others (mention)		

505. From where you procure services

SN	Services	Source of purchase	Method of purchase
1	Operation and maintenance of plant		
2	Technology transfer		
3	Studies related to production, marketing		

6. Marketing and distribution

601. Do you have marketing strategy?

- a) Yes b) No

602. If yes, what were the strategies undertaken for market promotion?

- a) Advertisement in audio media b) Advertisement in audio-video
 c) Advertisement in printing media d) Interpersonal meeting e) Door step marketing
 f) Discount rate g) Booths in strategic location h) Milk availability all the time
 i) Cold chain support i) Others (Specify...)

603. Please mention distribution channel and market outlets for your products

Particulars	No	Name-Location
Own sales counter (Nos)		
Wholesale (Nos)		
Retail (Nos)		
Franchise shops (Nos)		
Others		

604. Are you bearing any social responsibility?

- a) Yes b) No

605. If yes, what you did in last fiscal year (FY 2074/75)

- a) School Milk Day b) Extra Curricular Activities in the School c) "Goth to Oth" program
 d) Others (specify)

7. Supervision and managerial works

701. Do you have any monitoring and evaluation schedule of plant operation?

- a) Yes b) No

702. If yes, how often you do monitor and evaluation of:

SN	Particulars	Monitoring		Evaluation	
		Who	When	Who	When
1	Product quality				
2	Market				
3	Equipment efficiency				
4	Staff performance				
5	Technology Development				

8. SWOT analysis, risk assessment and mitigation measures with respect to manpower involved in Dairy Industries with special reference to product development, quality of the dairy products, and managerial and financial performances

Strength	Weakness
1. 2. 3. 4.	1. 2. 3. 4.
Measures upgrading the strength 1. 2. 3. 4.	Measures to minimize the weaknesses 1. 2. 3. 4.
Opportunities 1. 2. 3. 4.	Threat 1. 2. 3. 4.
Measures for maximum use of opportunities 1. 2. 3. 4.	Measures for mitigating the threats 1. 2. 3. 4.

Thank You

(2) Key Informant Interview (KII) Check List/Format

(Potential KI: Local Level Government/Palikas/DLSO/NDA/DIA authorities)

Name:

Institution:

Position:

Place:

Date:

1. Do you have any information on number of dairies in district/Palikas (U/R municipality) ?

If yes, how many:

Processing more than 50,000 liters/day	
Processing 10,000-50,000 liters/day	
Processing 1000-10,000 liters per day	
Processing less than 1000 liters/day	

2. Is there any difference in milk processing in lean and flush season? If yes, what is the difference between the season?
3. From where the milk processors collect the milk (please name the places) - milk collection centers, MPC, U/R municipality, tole, village etc.
4. What dairy products they produced? Please name the dairy products and approximate quantity of production per day.
5. Where the processing industries sale their products. Name the places by dairy products.
6. How the processing industries distribute/sale the dairy products (e.g. whole sale, retail, franchise, door steps etc.)
7. How is the availability of dairy products in the market? is available all the time or is limited time only?
8. What is the quality of dairy products available in the market? Are you satisfied with the quality? If no what should be done to improve the quality?
9. In an average how, many staffs are working in those industries (by scale of processing capacity)
10. How many hours the dairy processing industries operating in a day?
11. What is the turnover of working staff in the industries?
12. Do you think dairy industries contributing in social development of this area?
13. Do you have any suggestions with regards to establishment, operation, products and the use of manpower in dairy industries?
14. Any more you want to say on dairy plants/industry in your localities.

Thank you.

(3) Observation checklist

Please observe the dairy processing industries and fill the format below:

SN	Particular	Yes	No	Remarks
1	Display GMP			
2	Display SOP			
3	Have GMP			
4	Have SOP			
5	Display CoC			
6	Have CoC			
7	HR plan			
8	Laboratory			
9	Pasteurization			
10	Homogenization			
12	IBT			
13	Boiler			
15	Cold room			
16	CIP			
17	Cleaning protocol			
18	Following sanitation protocol			
19	Sanitation status	Excellent	Good	Poor
20	Staff personal hygiene	Excellent	Good	Poor

Annex 2: List of the Dairies Surveyed (by dairy type)

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
1	Baglung Dugdha Sahakari Sanstha Ltd.	Small	Division Cooperative Office, Baglung	Baglung Municipality	2	Baglung bazar	Baglung	Dipak Gautam, chairman	Baikuntha P Sharma, Prod. head	068-520061	9857631330
2	Kaligandaki Dugdha Sahakar Sanstha Ltd.	Small	Division Cooperative Office, Baglung	Baglung Municipality	12	Takuri	Baglung	Mukti P Acharya, chairman	Hiramani Sharma, Man.	067-420883	9857623490
3	DMPCA Ltd. Tanahu	Small	Division Cooperative Office, Tanahu	Byas Municipality	2	Damauli bazar	Tanahu	Yagya P Sharma, chairman	Raju Bhujel, Man.	065-560575	9846245337
4	Belbase Dugdha Sahakari Sanstha Ltd.	Small	Division Cooperative Office, Tanahu	Byas Municipality	13	Damauli bazar	Tanahu	Shree P Sakhi, chairman	Yam B Sarumagar, AC	065-560337	9825145571
5	District Cooperative Association (merged with Saptagandaki Dugdha Sahakar Sanstha Ltd.)	Small	Division Cooperative Office, Kaski	Pokhara Metropolitan	7	Lakeside	Kaski	Rabi Raman Tiwari, chairman	Bhoj Raj Ghimire, S.Man.	061-463079	061-463079
6	Panthi Dairy Industries Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Pokhara Metropolitan	10	Pokhara Industrial Area	Kathmandu	Resham Raj Panthi, owner	Sanjog Kaphle, Admin/AC	061-533341	9856020318
7	Asal Dairy Industries	Small	Dep. of Cottage & Small Industries, Kathmandu	Pokhara Metropolitan	14	Pokhara Industrial Area	Kathmandu	Ram Bdr Hamal, owner	Prakash Bhattarai, Man.		9846701014
8	Gaurishankar Dugdha Prashodhan Sahakari Ltd.	Small	Division Cooperative Office, Kaski	Pokhara Metropolitan	22	Pumdibhumdi	Kaski	Shankar Baral, chairman	Kul Prasad Baral, Man.		9846096706
9	Bajgain Dairy Industry Pvt. Ltd.	Small	Office of Cottage & Small Industries, Kaski	Pokhara Metropolitan	26	Budhibazar	Kaski	Gyanendra Bajgain, owner	Gyanendra Bajgain, owner	061-411678	9856028738
10	Lavkush Dairy Industry Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Pokhara Metropolitan	8	Srijana chowk	Kathmandu	Ramchandra Baral, owner	Lila Acharya, Man.		9856023995

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
11	Jaya Himat Dairy Industry Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Pokhara Metropolitan	17	Ratopairo	Kathmandu	Shiva Hari Acharya, chairman	Shiva Hari Acharya	061-462244	9856021545
12	Nagdada Dugdha Sahakari Sanstha Ltd.	Small	Division Cooperative Office, Kaski	Pokhara Metropolitan	1	Nagdada	Kaski	Chudamani Adhikari, chairman	Yam P. Adhikari, Man.	061-414043	9846030186
13	Panji Dairy Industry Pvt. Ltd.	Small	Office of Cottage & Small Industries, Kaski	Pokhara Metropolitan	15	Nayagaun	Kaski	Pan B Gharti, owner	Pan B Gharti		9856035973
14	Shreekrishna Dairy Industry Pvt Ltd.	Small	Office of Cottage & Small Industries, Kaski	Pokhara Metropolitan	10	Pokhara Industrial Area	Kaski	Suresh Shrestha, owner	Suresh Shrestha, owner	061-526709	9856020975
15	Srinagar Dairy	Small	Office of Cottage & Small Industries, Palpa	Tansen Municipality	6	Bhimsen tole	Palpa	Ram Kanta Neupane	Sandeep Neupane	075-520754	9857060825
16	Jaikisan Dairy	Small	Office of Cottage & Small Industries, Palpa	Tansen Municipality	6	Bhimsen tole	Palpa	Titka Ram Khanal	Tika Ram Khanal	075-522513	9857060175
17	Pabitra Dairy	Small	Office of Cottage & Small Industries, Palpa	Butwal Sub-Metropolitan	4	Buddha path	Palpa	Megh Raj Bhandari	Parbati Bhandari	071-543427	9857025489
18	Shivaganga Dairy	Small	Office of Cottage & Small Industries, Rupandehi	Devdaha Municipality	9	Bhaluhi	Rupandehi	Hira B Khatri	Hira B Khatri	071-403134	9857020134
19	Lamahi Dairy Udyog	Small	Office of Cottage & Small Industries, Dang	Ghorarai Sub-Metropolitan	5	Gorakshya marga	Dang	Khem raj Ghimire	Shatya Narayan Yadav	082-540454	9857840454
20	Khaptad Dairy Industry Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Godawari Municipality	6	Badeha	Kathmandu	Bhawani P. Joshi		525976	9848576676
21	Shree Karai Khola MPC	Small	Division Cooperative Office, Kailali	Birendranagar Municipality		Karaikhola	Surkhet	Netra Sharma	Thoumlal		9844874522

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
22	Jaya Bageshwori Milk Utpadan kendra	Small	Office of Cottage & Small Industries, Banke	Nepalgunj Sub-Metropolitan	2	Gharbari tole	Banke	Badrudin Ansari	Dandapadi Paudel	081-527826	9848027058
23	Kanchan Dairy	Small	Office of Cottage & Small Industries, Dang	Lamahi Municipality	4	Lamahi bazar	Dang	Bishwa Prakash Adhikari	Rishav Parajuli		
24	Kalaiya Dairy Center	Small	Office of Cottage & Small Industries, Bara	Kalaiya Sub-Metropolitan	5	Husukpur tole	Bara	Shobha Singh	Ram Sah Yadav	053-550405	
25	Amrit Dairy Pvt. Ltd.	Small	Office of Cottage & Small Industries, Bara	Jitpur-Simra Sub-Metropolitan	3	Bajheni	Bara	Parbati Devi Sharma	Megh Raj Subedi		9855080045
26	Gwala Dairy Center	Small	Office of Cottage & Small Industries, Parsa	Birgunj Sub-Metropolitan	2	Hapkaiya	Parsa	Mallum Thakurai	Mallum Thakurai		9845307868
27	Shivam Dairy Udyog	Small	Office of Cottage & Small Industries, Saptari	Rajbiraj Municipality	8	Panitanki road	Saptari	Sudhama Prasad Singh	Puspendra P. Yadav	031-523793	9819989734
28	Milco Industries Pvt. Ltd.	Small	Office of Cottage & Small Industries, Siraha	Lahan Municipality	22	Machha farm	Siraha	Ajab Lal Yadav	Purushottam Jha	026-711710	9805310287
29	Jay Ma: Santoshi Dairy Pvt. Ltd.	Small	Office of Cottage & Small Industries, Siraha	Lahan Municipality	8	2 No. Road	Siraha	Pawan Kumar Yadav	Tripti Yadav	026-712526	9860306909
30	Dharan Dairy Food Products Pvt. Ltd.	Small	Office of Cottage & Small Industries, Sunsari	Dharan Sub-Metropolitan	8	Dharan Industrial Area	Sunsari	Kamalesh Kumar Shrestha	Kamalesh Shrestha		9852054236
31	Gorash Dairy Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Sundarharaicha Municipality	7	Pathibhara tole	Kathmandu	Chandra bdr. Bohora	Bishnu Bohora		9852056664/985205663
32	Shivam Dairy Udyog	Small	Office of Cottage & Small Industries, Morang	Biratnagar Sub-Metropolitan	4	Dhaat	Morang	Punita Sinha	Krishna Rayamajhi	021-420705	9802755460

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
33	Mahat Dairy	Small	Office of Cottage & Small Industries, Ilam	Maijogmai Rural Municipality	1	Nayabazar	Ilam	Toyanath Mahat	Saroj Mahat		9852680019/9842781277
34	Nawaratna Krishi & Pashupalan Kendra Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Ilam Municipality	5	Borbote	Ilam	Ganga Bhurtel	Kuber Fago		9842709313
35	Purba Nepal Krishi & Dairy Pvt. Ltd	Small	Office of Cottage & Small Industries, Jhapa	Damak Municipality	5	Gharkhare	Jhapa	Hem Chandra Khanal		023-580746	9842658964
36	Shree Sajha Dairy Udyog	Small	Office of Cottage & Small Industries, Jhapa	Damak Municipality	8	Milan marg	Jhapa	Yogananda Khatiwada		021-582775	9852683783
37	Ritika Dairy Udyog	Small	Office of Cottage & Small Industries, Jhapa	Mechinagar Municipality	12	Dhaijan	Jhapa	Rajan chimoriya	Yogendra chimoriya	023-460036	
38	Sanjeevani Dairy	Small	Office of Cottage & Small Industries, Bhaktapur	Bhaktapur Municipality	2	Jagati	Bhaktapur	Upashna Rana	Ahankar Marnikarmi	01-5122166	9841234055
39	Bhaktapur Dairy	Small	Dep. of Cottage & Small Industries, Kathmandu	Bhaktapur Municipality	2	Bhaktapur Industrial Area	Bhaktapur	Pushparam Saiju	Pushparam Saiju	01-6611106	9851035177
40	Galfu Binayak Dairy Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Banepa Municipality	1	Nala	Kavre	Bimsen Dulal	Shyam Dulal	011-411194	9851156724
41	Jay Shree Krishna Dairy Industry	Small	Office of Cottage & Small Industries, Kavre	Panchkhal Municipality	4	Tamaghat	Kavre	Balkrishna Sapkota	Jayakrishna Sapkota	011-499030	9851079447
42	Himalayan Chisyan Kendra	Small	Office of Cottage & Small Industries, Kavre	Panauti Municipality	2	Kushadevi	Kavre	Rabindra Humagain			9851013261
43	Shreeram Dairy	Small	Office of Cottage & Small Industries, Kathmandu	Kathmandu Metropolitan	3	Dharapati	Kathmandu	Bishnu Dahal	Madhav Dahal	01-4373252	9841856195

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
44	Puspa Dairy	Small	Office of Cottage & Small Industries, Kathmandu	Kathmandu Metropolitan	16	Gangajamuna marg	Kathmandu	Krishna B. Basnet	Puspa Raj Basnet	01-4350203	9851098368
45	Ujjwal Dairy	Small	Office of Cottage & Small Industries, Kavre	Kathmandu Metropolitan	17	Joshipark marg	Kathmandu	Ram Bhakta Dahal	Ram Bhakta Dahal	01-4218256	9851124249
46	Samuhik Krishak Dairy Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Kathmandu Metropolitan	16	Balaju Industrial Area	Kathmandu	Rabi Pd Rijal	Ramchandra Dhital	01-4364235	9851230162
47	HD Milk & Beverage Industries Pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	Kathmandu Metropolitan	6	Budhanilkanth a	Kathmandu	Manoj Acharya	Gita Prasad Dhakal	01-4376729	9842245187
48	Gayatri Dairy Udyog	Small	Office of Cottage & Small Industries, Makawanpur	Hetauda Sub-Metropolitan	2	Srijanshil marg	Makawanpur	Sasitri Raut	srijan koirala	051-521918	9841527006
49	Gokul Milk Industry	Small	Office of Cottage & Small Industries, Makawanpur	Hetauda Sub-Metropolitan	4	Sugandha path	Makawanpur	tirtha ram adhikari	-	057-526647	9845382390
50	Narayani Dairy	Small	Office of Cottage & Small Industries, Makawanpur	Hetauda Sub-Metropolitan	4	Gordai	Makawanpur	Biplop kanti boss	Pradip gopal shrestha	057-521623	9855007275
51	Shubha Dairy	Small	Office of Cottage & Small Industries, Makawanpur	Hetauda Sub-Metropolitan	9	Triveninagar	Makawanpur	Gyan bdr. Lama	Mangal singh Rana		
52	Pawan Dairy	Small	Office of Cottage & Small Industries, Chiwan	Bharatpur Metropolitan	16	Bijayanagar	Chitwan	Pawan pd. Bastola		056-592511	9855075250
53	Amulya Dairy pvt. Ltd.	Small	Office of Company Registrar, Kathmandu	khaireni Municipality	1	Jyamire	Chitwan	Kiran kumar Shrestha	Laxmi narayan Dulal	056-582930	9851114728

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
54	Vision Dairy	Small	Office of Cottage & Small Industries, Chitwan	Bharatpur Metropolitan	4	Barsent	Chitwan	Suresh chandra Adhikari	Sujan Adhikari	057-527923	9845773376
55	Annapurna Milk Production Cooperative	Small	Office of Company Registrar, Kathmandu	Bharatpur Metropolitan	6	Keshchbag	Chitwan	bhagirath temalsing	karun pokhrel	056-6400139	9855050524
56	Lucky Dairy Udyog	Small	Office of Cottage & Small Industries, Ilam	Suryodaya Municipality	3	Tinkhutte	Ilam	Tulu Tamang	Tulu Tamang		9842657847
57	Mahat Dairy	Small	Office of Cottage & Small Industries, Ilam	Maijogmai Rural Municipality	2	Jogmai	Ilam	Toyenath Mahat			9852680019
58	Namobuddha Cheese Industry	Small	Office of Cottage & Small Industries, Ilam	Maijogmai Rural Municipality	3	Gupti	Ilam	Gambir Helmu	Chandra bdr. Helmu		9863610613
59	Gaumata Dairy Udyog	Small	Office of Cottage & Small Industries, Ilam	Suryodaya Municipality	9	Barbote fikkal	Ilam	Padam bdr. Bhandari	Padam bdr. Bhandari		9806054071/9742618456
60	Binayak Dairy Udyog	Small	Office of Cottage & Small Industries, Ilam	Suryodaya Municipality	3	Pradhan tole	Ilam	Mahendra Pradhan	Mahendra Pradhan		9742601083
61	Siddhartha Dairy Udyog	Small	Office of Cottage & Small Industries, Ilam	Maijogmai Rural Municipality	3	Chitre	Ilam	Pasang chiring yelmo			9844681039
62	Panchamrit Dairy Udyog	Small	Office of Cottage & Small Industries, Ilam	Suryodaya Municipality	3	Rusung chowk	Ilam	Chandra bdr. Rai			9814926741
63	Fishtail Dairy Industry Pvt. Ltd.	Medium	Office of Cottage & Small Industries, Kaski	Pokhara Metropolitan	10	Pokhara Industrial Area	Kaski	Udit Kumar Shrestha, chairman	Navaraj Devkota, Fin. head	061-533077	9856032285
64	Lumbini Dairy	Medium	Office of Cottage & Small Industries, Rupandehi	Tilottama Municipality	3	Shanti chowk	Rupandehi	Bikral Rijal	Bikram Rijal		

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
65	Pathak Dairy Industries	Medium	Office of Cottage & Small Industries, Kailali	Bhimdatta Municipality	4	Bhagatpur	Kanchanpur	Prem prakash Pathak		099-520037	9858751548
66	Kalash Milk Industries Pvt. Ltd.	Medium	Office of Cottage & Small Industries, Parsa	Pokhariya Municipality	1	Dhorey	Parsa	Shyam Badan Yadav	Shyam Badan Yadav		9855022287
67	Chhinmasta Dairy Udyog	Medium	Office of Cottage & Small Industries, Saptari	Rajbiraj Municipality	7	Khasali tole	Saptari	Laduwati Sharma Sutihani	Satya Narayan Sharma	031-522327	9842823442
68	Milan Dairy & Foods Industries	Medium	Office of Cottage & Small Industries, Saptari	Rupani Rural Municipality	5	Saptari Industrial State	Saptari	Milan Kumar Singh	Milan Kumar Singh	031-523357	9852821900
69	Kamdheni Dugdha Bikas Sahakari Sanstha Ltd.	Medium	Division Cooperative Office, Sunsari	Itahari Sub-Metropolitan	20	Tarahara	Sunsari		Krishna P Ghimire	025-475986	9852029042
70	Jiwan Bikash Dairy Products Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Biratnagar sub-Metropolitan	1	Belgachhi tole	Morang	Omnath Bhandari	Dipesh Khatiwada	021-462944	9802796289
71	NMC Dairy	Medium	Office of Cottage & Small Industries, Jhapa	Mechinagar Municipality	8	Dhulabari	Jhapa	Laxmi Prasad Upreti	Shyam Mishra	023-563188	
72	Contry Foods	Medium	Dep. of Cottage & Small Industries, Kathmandu	Suryabinayak Municipality	12	Bhatedhikur	Bhaktapur	Santoshlal Shrestha			9856020328
73	Jagadamba Dairy & Beverage Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Bhaktapur Municipality		Byasi	Bhaktapur	Shiva charan tyata	Surendra Neupane	01-6610501	9851007004
74	Saiju Dairy Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Changunarayan Municipality	9	Kamalbinayak	Bhaktapur	Surya ram Saiju	Tirtharam Saiju		9851017072

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
75	Kharipati Dairy	Medium	Office of Company Registrar, Kathmandu	Changunarayan Municipality	7	Kharipati	Bhaktapur	Rajaram Khadka	bishwo ram khadka	01-5091184	9851086351
76	Modern Dairy	Medium	Office of Company Registrar, Kathmandu	Suryabinayak Municipality	7	Gundukiwa chowk	Bhaktapur	Ram prasad tyata	Raj tyata	01-6636585	985123397
77	Sivam Dairy Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Bhaktapur Municipality	7	Byasi	Bhaktapur	Tulasi ram Saiju	Kedar pd. Humagain	01-6610704	9851038615
78	Kalika Dairy Pvt. Ltd	Medium	Office of Company Registrar, Kathmandu	Changunarayan Municipality	7	Bageshwori	Bhaktapur	Asharam tyata	Shivaprasad Tyata	01-6614192	9851059905
79	Ekikrit milk & Agriculture Production Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Panauti Municipality	4	Dudhmil	Kavre	Amit Kumar Agrawal		011-440015	9855068705
80	Nepal Dairy Pvt. Ltd.	Medium	Dep. of Cottage & Small Industries, Kathmandu	Lalitpur Metropolitan	23	Hattiban	Lalitpur	Dr. Bdr Rajbhandari	Laxman Sherchan	01-5250373	9841458760
81	Himalayan Dairy	Medium	Office of Company Registrar, Kathmandu	Lalitpur Metropolitan		Laganthel	Lalitpur		Prachandam an Shrestha		
82	Rajdhanai Dairy	Medium	Office of Cottage & Small Industries, Lalitpur	Lalitpur Metropolitan		Patan Industrial Area	Lalitpur	Ramlari Bajgain	Ramlari Bajgain	01-5530722	9841658526
83	Samyukta Dairy & Food Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Lalitpur Metropolitan	15	Patan Industrial Area	Lalitpur	Ganesh P Dahal	Kul Prasad Ghimire	01-5537492	9851094450
84	Nava Pratibha prabhat Dairy	Medium	Office of Cottage & Small Industries, Lalitpur	Lalitpur Metropolitan		Tokhel chautara	Lalitpur	Kamal Raj Humagain	Kamal Raj Humagain		
85	Adhunik Dairy Products Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Kathmandu Metropolitan		Balaju Industrial area	Kathmandu	Bishow Raj Basnet	Bishow Raj Basnet	01-4361342	9851032165

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
86	Kathmandu Dairy Pvt. Ltd.	Medium	Office of Cottage & Industries, Kathmandu	Kathmandu Metropolitan		Babarmahal	Kathmandu	Dil Ram Maharjan	Pradip Maharjan	01-4244155	9869373612
87	Tulasa Dairy	Medium	Office of Company Registrar, Kathmandu	Kathmandu Metropolitan	7	Manohara	Kathmandu	Ramchandra Thapa	Ramchandra Thapa	01-4153822	
88	Hetauda Dairy Pvt. Ltd.	Medium	Office of Company Registrar, Kathmandu	Hetauda Sub-Metropolitan			Makawanpur	Basant kumar Chaudhary			
89	Sujal Dairy Industries Pvt. Ltd.	Large	Office of Company Registrar, Kathmandu	Pokhara Metropolitan		Pokhara Industrial Area	Kaski	Niraj Shrestha	Rajeswor Ghimire, Chief Admim	061-520355	9801240202
90	Sitaram Gokul Milks	Large	Office of Company Registrar, Kathmandu	Kirtipur Municipality		Kirtipur	Kathmandu			01-5234357	
91	DDC	Large	DDC	Kathmandu Metropolitan	16	Balaju Industrial area	Kathmandu		Rajendra Pd Adhikari	01-4414841	9851174436
92	DDC Pashupatinagar Cheese Production center	Cheese	DDC	Suryodaya Municipality	2	Pashupatinagar	Ilam	DDC	Manish Thapa	027-550042	9841322697
93	Naya Bazar Cheese Production Center	Cheese	DDC	Maijogmai Rural Municipality		Nayabazar	Ilam				
94	Maipokhari Cheese Production Center	Cheese	DDC	Ilam Municipality		Maipokhari	Ilam				
95	Rakse Cheese Production Center	Cheese	DDC	Ilam Municipality		Rakse	Ilam				

SN	Name of Dairy Industries/ Plants	Dairy type	Place of registration	Rural/ Municipality	Ward No	Place of operation	District	Head of Industry	Contact Person	Phone	Mobile
96	Anmol Cheese Udyog	Cheese	Office of Cottage & Small Industries, Ilam	Maijogmai Rural Municipality	1	Chisapani	Ilam	Gobinda Khadka	Bhakta bdr. Thami		9840588027/9742648772
97	Kanchanjunga Cheese Industries	Cheese	Office of Cottage & Small Industries, Ilam	Ilam Municipality	1	Rakse	Ilam	Angrita sherpoa	kamal thami		9824057900/9814040450
98	Cheese Production Centre Langtang	Cheese	DDC	Langtang			Rasuwa		Chhatra badur Tamang		9741046632
99	Gosaikunda Cheese Production Centre	Cheese	DDC	Gosaikunda Municipality	5	Chanaanbari	Rasuwa		Chhatra badur Tamang		9741046632
100	Cheese Production Centre Dunge	Cheese	DDC	Gosaikunda Municipality	6	Pangelekharka	Rasuwa		Purna badur Garel		9741014002
101	Gatlang Yak Cheese Centre	Cheese	DDC	Dunaka	2	Gatlang	Rasuwa		Dhan Badur Garel		9741198464