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# UNIT 3 HUMAN RESOURCES (MAN POWER PLANNING FOR DAIRY/PLANT)

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## Structure

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## 3.0 OBJECTIVES

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After reading this unit, we shall be able to:

- 1 human resource planning for dairy and shift operation;
- 1 understand dairy plant functions and management to assess requirement of human resource;
- 1 understand factors related to quality and strength of human resource;
- 1 understand motivational schemes and basic theories; and
- 1 understand communication, leadership, training and coordination aspects.

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## 3.1 INTRODUCTION

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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 labour intensive, the proper planning and use of human power become highly significant to get proper productivity. Manpower in the form of labours, 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 labours to managers behaves in the context of the organizational objectives.

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## 3.2 HUMAN RESOURCE PLANNING

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Planning of human resource should 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 labour 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. In order to have effective planning of human resource we shall discuss below various influencing aspects:

### **i. Functional Requirement of Plant**

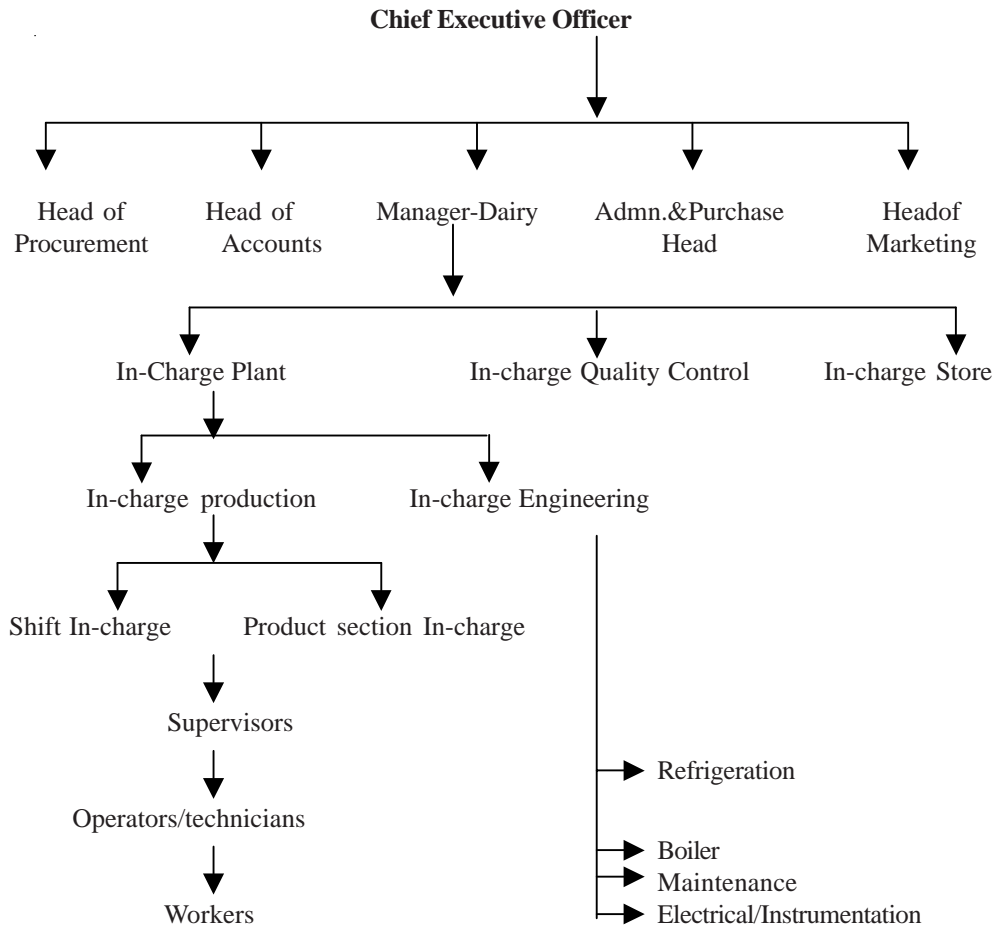
Planning consideration of dairy plants includes requirement of various functions. Management of milk shed and procurement of milk, processing, maintenance and utilities, materials management, accounting and finance, marketing, quality assurance, personal management and management information system are the most prominent functions of dairy organizations. Independency of these functions varies greatly on the size of organization and style of management. Therefore, manpower planning may include requirements of these 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 labour 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. Continuous assessment is done to ensure proper training and implement motivating schemes.

### **ii. Organizational Structure**

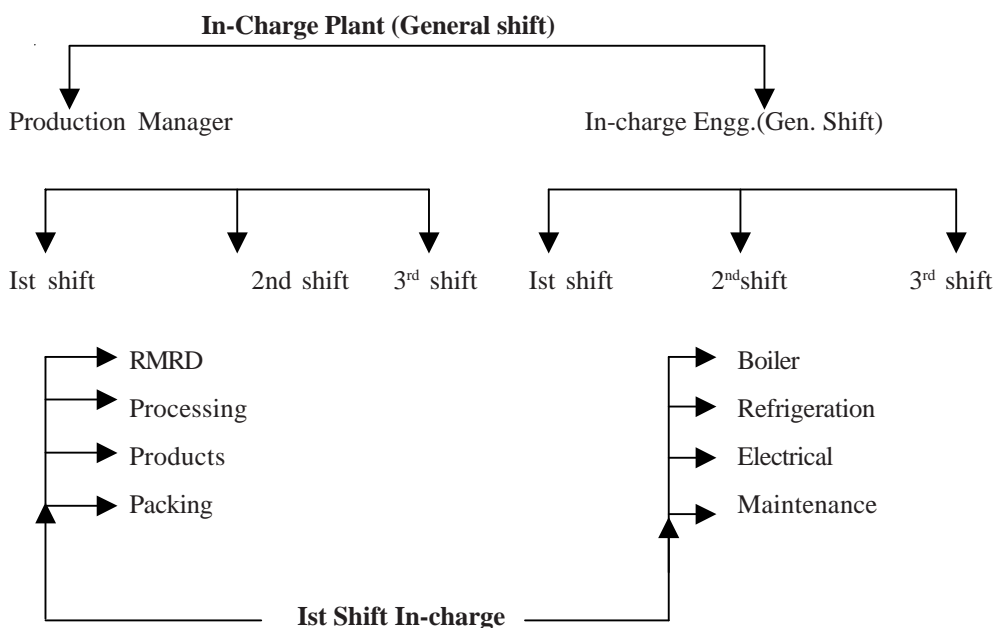
Manpower planning has to go with the organizational structure involving and inter-working all of its functions. A most commonly used organizational structure of dairy plant is given in figure-3.1. The working of departments other than plant work is done in day shift, whereas plant work is done in one or more shifts based on workload or market requirements. A typical shift structure is depicted in figure-3.2. 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 the their shift.

**Figure- 3.1 Organizational Structure for a Dairy Plant**



**Figure 3.2 : Structure of Shift in Dairy Plants**



### iii. Factors Affecting Human Resource Deployment

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. Some times 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 labour requiring operations like product shifting, transportation and filling are carried out through conveyor, pumps and suitable equipments. In the modern dairy plants, monitoring of plant operations and process parameters is done through sensors and controls.
- 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. Some times number of shifts are 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; 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> 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.

**viii) Centralized or Decentralized Operations:** Some times 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 situations manpower requirement reduces to a great extent due to absence of can milk reception, sampling, testing and cleaning operation. Similarly, provision of bulk storage do 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 reduces extra and regular workers requirement.

#### **iv. Manpower Quality Aspects**

As discussed above dairy plants involve ordinary to specialized and labour 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.
- b) Chemical Analysis:** Laboratory work-involving analysis of raw and finished products by scientific testing requires candidates with chemistry background and therefore graduates in Chemistry, Dairy/Food technology/Agriculture are suitable for such jobs.
- 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 and promotional activities.
- 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 Table 3.1 and 3.2). 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.

#### v. Determining Manpower Strength in Dairy

Manpower 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-3.2.3 will be of immense help. We are illustrating below examples focusing on 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 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 person 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.

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### Check Your Progress-1

1. Milk packing section of a dairy plant has three packing machine of double head, one crate washer, and one crate convey or. After packing crate are stacked properly in the cold store. If one person is kept for cleaning and one for other general work, then calculate total strength of milk packing section?

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- 2 An indigenous product section has two kettles for Peda and one kettle for Paneer. Calculate total manpower per shift?

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#### vi. 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 3.2.5 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.

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### 3.3 OPTIMIZING USE OF HUMAN RESOURCE

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Dairy involves numerous operations requiring large number of workmen. Therefore, the productivity in dairy is highly dependable on the effective use of deployed manpower. It has been observed that under and over strength of manpower are unproductive and undesirable. Therefore, the best way is to deploy optimum strength and manage high productivity of each individual. Some of the relevant management concepts to optimize human resource are discussed below:

#### i. Leadership

Leadership is the vital point of contact between the workforce and their higher-ups. It is in fact the activity of influencing people to strive willingness for organizational objectives. Good leadership does this by lifting people's vision to higher sights, raising of their performance to a higher standard and building of their personality beyond the normal limitations.

#### ii. Motivation Concepts

We know that human behaviour varies with circumstances and motivational factors. Motives or needs of a person are the real starting point and hence, is the core of management process. It is an effective instrument in inspiring the workforce to perform the duties by fully utilizing their skills and capabilities. The motivation and its influencing factors are explained by various theories. Some of them are given below to understand the process:

- a) **Maslow's Theory:** It is a need-based theory, which states that motive for work is developed for satisfying needs in hierarchical manner. Satisfaction of basic needs like physiological, safety, social will lead to motivation for higher needs such as ego and self- fulfillment /self actualization needs.
- b) **E-P-V Theory:** Expectancy-Potentiality–Valence (E-P-V) theory states that combine effect of these three factors will determine ones inner urge to motivate or de-motivate for a particular work. Person will think of performing only if he



perceives that he has ability to perform( factor E), that his efforts will result in the desired output(factor P) and the output has importance to him(factor V). The value of E and P varies from 0 to 1, whereas value of V could be from (-1) to (+1).

- c) **Herzberg's Motivation-Hygiene Theory:** Hygiene factors also termed, as maintenance factor that support employees' mental health are responsible for motivation. Their presence do not motivate, whereas the absence of these factors dissatisfies the employees. Hence they provide only working environment.
- d) **McGregor's Participation Theory:** Based on "X Theory" and "Y Theory" workmen can be controlled. X Theory favors persuasion for doing work by coercing, controlling, directing, threatening, punishing, whereas Y Theory believes in persuasion by positive management style.

Therefore, understanding these theories can help the management to recognize requirement of workforce, set realistic targets, create congenial atmosphere and facilities to improve their abilities and implement right performance evaluation and reward/punishment policies.

### iii. Skill Enhancement

As you have recognized in the motivation theories skill and ability of work force is very important. This can be achieved by identifying training needs of workforce and providing necessary support to fulfil them. A trained person better perceives his capabilities and performs the task more confidently. Training develops necessary knowledge, attitude and skills

### iv. Management of Resistance to Change

It is rightly said that every action has its reaction. In similar way every furtherance of work, implementation of new methodology or technology, there happens to be a resistance to change, which if not managed appropriately in time, be detrimental to the productivity. This resistance would overcome by taking all concern human resource in confidence by correct assessment of impacts due to change, planning and undertaking actions to overcome these impacts and create awareness with effective communication involving good listening of suggestions.

### v. Effective Communication

Communication involves a systematic and continuous process of telling, listening and understanding. This is an interchange of thought or information to bring about mutual understanding and confidence. It is the exchange of facts, ideas and viewpoints that brings about commonness of interest, purpose and efforts. Communication can be formal or informal, verbal or written and downward, upward or sideward depending upon the situation and requirement. Communication involves communicator/teller, message, communication symbols, communication channel and receiver/listener. Quality in these determines the overall effectiveness of communication. In order to have effective communication various barriers such as organization structure, status and position, semantic or language problem, screening or filtering of information, resistance of change and perception involved in the process must be understood to overcome them. For becoming good speaker, one has to be good listener too.

**vi. Effective Coordination**

Coordination is an orderly arrangement of group efforts to provide unity of action in the pursuit of common objectives. By effective coordination workforce can be utilized to put efforts for achieving unity of purpose.

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**Check Your Progress-2**

1. Calculate Manpower requirement per shift for a dairy plant having following features?

- RMRD with straight through can washer, can conveyor facilities
- Milk processing one pasteurizer with Complete CIP system
- Butter churn- 1 number with ghee production facility.
- Two milk packing machines, crate washer, crate conveyor, good hygiene and weighing of milk pouch every 10 minutes.
- Boiler- 1 number
- Two ammonia compressor
- One electrician and one fitter cum welder

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2. What sort of help theories of motivation can provide?

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3. Why do we need to manage resistance of change?

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4. Write main barriers to effective communication process?

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### **3.4 LET US SUM UP**

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Importance of human role in achieving organizational objectives is discussed in this unit. Deployment, use and management of human resource are more complex and challenging task as compared to other resources. Nature, technology and management aspect of other resources could be assessed easily with more objectivity, but the same is not true for human resources. Complex human nature with changing needs, habits and ambitions makes the task of managing workforce more challenging. Therefore, consideration of influencing factors and situation for effective planning, deployment, training and motivational scheme needs thorough consideration in dairy plants.

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### **3.5 KEY WORDS**

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- Human** : a person
- Resource** : something ready for use or available as needed
- Shift** : a group of people working in relay with other groups, or the work period involved, such as production shift.
- Motivation** : to persuade for doing something.
- Skill** : an art, craft or science especially one involving the use of hands or body.
- Attitude** : the posture of body in connection with an action, mood etc.

**Training** : the process of being trained for some sport or practice etc.

**Coordination** : harmonious adjustment or action.

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### **3.6 SOME USEFUL BOOKS**

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Abbass F, Alkhafaji, 1995, Competitive Global Management Principles and Strategies, New Age International (P) Limited, Dariya Ganj, New Delhi-110002.

Aquinas PG, 1996. Principles of Management, Anmol Publications Pvt. Ltd, Ansari Road, New Delhi.

Principles and Practices of Management, 1995, International Institute of Management Sciences, BC-213, Salt lake, Sector-I, Kolkata-700064

Sur, Mary, 1996, Workers participation in management, CBWE Publication, Nagpur-10.

Tulpute, Bagaram, 1996, Industrial Relations, CBWE Publication, Nagpur-10.

Subbarayudu, MV, 1997, Learning to lead, CBWE Publication, Nagpur-10

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### **3.7 ANSWERS TO CHECK YOUR PROGRESS**

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Your answer should include the following points:

#### **Check Your Progress - 1**

1. Milk packing: crate washer (2), crate loading/unloading (2), machine (2+2), cold store (2), cleaning & pouch weight (1), supervisor (1):

Total: 1 supervisor/operator, 11 workers

2. Peda kettle 2 workers, peda ball making-1, packing 1, paneer vat 1 workers, cleaning 1 worker, cutting –1, packing-1, supervisor –1

Total worker: 8 and 1 supervisor

#### **Check Your Progress-2**

1. - RMRD: grading (1), lid opening(1), weighing (1), sampling (1), can tilting (2), drip saver(1), washer (2), lid cleaning(1), inspection(1), cleaning (1), operator(1) ; Total: one operator plus 12 workers

- Milk processing: operator(1), helper(1), cleaning (1) ; Total –3 ( 1+2)

- Butter churn: operator (1)+ 2 worker, Ghee operator(1), workers (2),

Total 2 operator, 4 workers

- Milk packing: crate washer(2), crate loading/unloading(2), machine (2+2), cold store(2), cleaning & pouch weight (1), supervisor(1):

Total: 1 supervisor/operator, 11 workers

- Boiler- 1 operator and one helper
- Refrigeration: 1 operator and one helper
- Maintenance: One electrician and one fitter cum welder
- Shift in-charge – 1, Supervisor 1, Operators 7, electrician – 1, fitter cum welder-1 = 9, Workers 31 + 5 relievers (one reliever for 6 workers)

Total strength of shift = 46 personnel

2. Motivational theories make us to understand dynamics of willingness to work. The willingness converts planning into output through actions. Proper analysis of human motivation and influencing factors help in designing incentive policies to get productive work.
3. One has to need more force, if wants to swim against the water current. Similarly implementing productivity work with resistance of change would require excessive efforts or the implementation would not be possible. Therefore resistance of change needs to be managed to smoothly sail the implementing process.
4. Main barriers to communication process include organization structure, status and position, semantic or language problem, screening of filtering of information, resistance of change and perception etc.