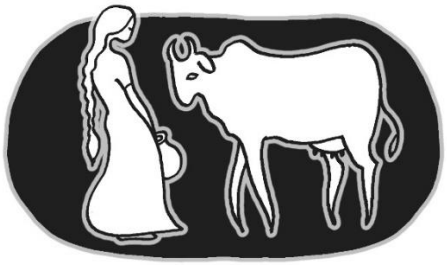
"Critical Analysis of Risk Management Involved in Maintenance of Livestock and its Effect on Rural Economy"



1. INTRODUCTION

From the ancient time of human civilization, where the process of rearing the domestic animals evolved, amongst all the other useful animals the cattle and buffaloes were always on top in the hierarchy.

Livestock are domesticated animals raised in an agricultural setting to produce commodities such as food – milk and meat, fibre, and labour. The term is often used to refer solely to those raised for food, and sometimes only farmed ruminants, such as cattle, buffaloes and goats etc. A probability or threat of damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through pre-emptive action. Risk management is the process of identifying, quantifying, and managing the risks that an organization faces. As the outcomes of business activities are uncertain, they are said to have some element of risk. Here it will be worthwhile to note that livestock being

a living animal the risks involved differ from the normal risks' attendant to the non-living objects like machinery etc. These risks include strategic failures, operational failures, financial failures, market disruptions, environmental disasters, and regulatory violations. Risk is a statistical concept that is measured using statistical concepts that are related to the unknown future. Almost all investments are exposed to it.

Risk management involves identifying the types of risk exposure within the company, measuring those potential risks, proposing means to evade insure or mitigate some of the risks and estimating the impact of various risks on the future earnings of the company. Risk can be managed in a number of ways: by the buying of insurance, by using derivative instruments as hedges, by sharing risks with others, or by avoiding risky positions altogether.

Dairying in India has emerged as a very important activity with around 300 million animals producing more than 146.3 million tonnes of milk per annum. Milk and milk products are highly perishable and therefore demands adequate quality and food safety. The role of the Indian Agriculture and allied sectors is of very importance in ensuring 'inclusive growth'. It is very essential to make the dairy farmers aware of the importance of the quality and the risks which should be addressed while carrying out the dairying activity.

Dairy in India is a unique activity in more than one respect. India ranks first in the world in having a large bovine population. So far as output is concerned, milk is the single largest agriculture commodity in the country. Dairy contributes nearly 33 per cent of the gross income of rural households in case of those who are having land and

in case of those who do not have any land it accounts of 50 per cent.

Of all foods milk tops as a single source of those dietary elements needed for maintenance of good health, especially for growing children and the senior citizens. Milk is highly nutritious food and an excellent source of energy, protein, vitamins and minerals. India ranks the largest milk producer in the world with a total production of 146.3 million tonnes.

India ranks first in milk production, accounting for 18.5 % of world production, achieving an annual output of 146.3 million tonnes during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 %. Whereas, the Food and Agriculture Organization (FAO) has reported a 3.1 % increase in world milk production from 765 million tonnes in 2013 to 789 million tonnes in 2014.

The following data will through light on it.

Table 1. 13: Top Six milk producing countries in the world.
(as on 31.3.2017)

Name of the country	India	America	China	Pakistan	Brazil	Germany
Milk production in Lakh Tons	1554.9	946.4	426.7	415.9	348.6	327.1

Source: FOASTAT, 1st March 2018

The majority of the countries either import milk or use skimmed milk powder to meet their demand. So far as per capita per year, milk consumption is concerned as on 31st March 2017 Finland was topping the list with 369.19 kg., while Indian consumption is 125.5 kg.

Name of the State	Gujarat	Maharashtra	Punjab	Rajasthan	Uttar Pradesh
Milk production tons ('000 omitted)	12784	10445	11282	20850	27770
Per day per capita availability of milk (grams)	563	243	1075	785	348

This shows that there is plenty of scope for the state of Maharashtra to step up its milk production.

Livestock: So far as milk is concerned broadly there are two types of milk are available. Those are: 1) buffalo milk 2) Cow milk.

There are number of varieties in buffaloes:

1) Local breed 2) Mehsana breed
3) Delhi Murrah 4) Jafarabadi
5) Surti 6) Pandharpuri

Each of the variety has its peculiarities so far as yield is concerned, maintenance is concerned. In cows: apart from the local breed there are two types of cross breed cows which are more popular in India.

Those are 1) Jersey 2) Holstein Frisian

Per Capita Availability of Milk AT All India and Maharashtra State level (gms. /day)

State	06-07	07-08	08 -09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
All India	251	260	266	273	281	290	299	307	322	337
Mahar -ashtra	181	184	188	190	197	206	213	219	228	239

Source: *Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, GoI.*

It can be seen from the above data that the per capital availability of milk at the national as well as Maharashtra state level is showing an increasing trend. The statistics also reveals that there is still scope for Maharashtra so far per capita milk availability is concerned. It means there is still untapped potential for dairy activity.

At the district union level, the milk collected is further processed in different forms as per the demand from the market and sold it through its retail outlets to the direct consumers. This is how the whole process gets completed.

2. RISK MANAGEMENT IN DAIRY

Dairy is an economic activity. Any economic activity is carried out to earn profit. According to the economic theory, profit is the reward for risks undertaken. Therefore, dairy activity is also susceptible for risk. Risk is

unavoidable in any business and dairy is not an exception. Risk is characterized by uncertainty of outcomes.

Risk in agriculture is all-encompassing and complex. This is mainly due to the fact that the Indian agriculture is dependent on the vagaries of the monsoon. India is a vast country and the climatic conditions also differ from region to region. Therefore, the origin of risks and its severity differs from situation to situation.

Management means a decision-making activity and choosing a right alternative to achieve the desired objective. This is achieved through various aspects of management, broadly planning, budgeting, staffing, directing, communicating, reviewing, etc. Therefore, the risk management envisages understanding the potential risk in any activity and thinks of various alternatives available, formulate a strategy identifying a right strategy, to overcome the risks involved. What is important is the assessment of risk in advance and developing solutions to overcome the same.

Integrated Risk Management is an approach in which instead of preparing a strategy for a particular risk in isolation (individually) all the stakeholders who are involved in running the activity come together and address the risk factor from a variety of angles and arrive at a solution to manage it. The risks are varied in nature. It may pertain to the policy, availability of raw material, availability of backward and forward linkages, natural calamities, etc.

In the following few paragraphs, the researcher has discussed various stages where risks are involved in the

dairy activity and the care required to be taken by the various stakeholders as have been pointed out earlier.

Risks Involved

Individual farmers: In today's circumstances it has become necessary that before undertaking the dairy activity the dairy farmer should understand the economics of the dairy activity. It has been observed that the dairy farmers are not maintaining books of accounts therefore, they are now aware whether their dairy unit is running in profit or otherwise. Of late, it has been observed that the prices of cattle feed, green and dry fodder have gone high making the dairy unit marginally viable.

Purchase of cattle: Care needs to be taken to select freshly calved cattle/buffaloes of 2nd and 3rd lactation from farmers after assessing their production performance for 3 milking with the idea that these cattle/buffaloes would be serving as future bull mothers. These should be purchased with 15 days of calving so that their peak yield is not missed.

Breeding and Health Care Management: Lack of awareness amongst the dairy farmers in India on technical skills regarding breeding practices including record keeping and progeny testing is the key deterrent for improving herd quality. It can be addressed through expansion of artificial insemination (AI) network and natural service bulls and extension services provided by research institutions, govt. and cooperative societies and private sector participation. Breeding services using superior quality, disease free germplasm needs to be given priority for addressing these issues. Timely identification of diseases and knowledge about preventive measures will

add to better livestock health which will further improve productivity and quality of milk.

Housing arrangement for the livestock: The principle source of contamination is the animal shed. It should have proper drainage, adequate lighting and ventilation. The surface should be dry in the animal shed. The milking area needs special care to ensure hygienic conditions. The drinking water to be given to the cattle should be potable. The udders should be clean, flanks of the animals as well as the utensils where the milk is being collected and the milker's hands should also be clean to prevent any contamination

Raring the Livestock & Health Care

Health Care: Milk from diseased animals should be kept separate and disposed of safely. Animals suffering from any contagious disease, including mastitis, should be segregated from the healthy ones. If washing of animals is not practiced regularly as is observed in most cases, at least grooming of the animals should be done to keep the hair and dust away from milk. The udder should be washed before each milking and dried with a clean cloth or towel.

Milking the cattle: In the case of hand milking, the danger of contamination coming from the milker is higher as compared with machine milking. The milker should therefore be free from contagious diseases. Nails should be well trimmed; she/he should wear clean clothes and should wash her/his hands with soap and water before milking, then with a dry clean towel. The milking area should be thoroughly cleaned after each milking.

Storage and Transport, Supplying the milk to the dairy / ultimate consumer: Greater care is required to be taken while storing the milk. Before it is stored, the cleanliness of the container needs to be ensured. According to the present legal provisions the container should be of stainless-steel material. The milk should be filtered before it is stored so as to ensure that any particles that might have entered in the milk are kept out. The container should have a proper lid and it should be stored in a cool place. Before each milking the containers should be cleaned and sanitized. The storage place should be free from flies, insects, dust, dirt, etc.

Care of the calf: Sucking method: There are various methods an in every method there are advantages and disadvantages. Due to space constraints only one method which is more popular is detailed hereunder with its advantages and disadvantages.

In this method, the calf is allowed to stay with its mother and allowed to suckle only a little before and after of milking the cow. The calf gets whole milk throughout lactation.

Advantages

i) This is natural system of feeding.
ii) The calf gets contamination free milk.
iii) No much care is required to take during feeding.
iv) The mother-calf affection developed.

Disadvantages

i) If calf dies, the cow refuses to let the milk.
ii) It cannot be ascertained about over feed or under feeding of the calf.

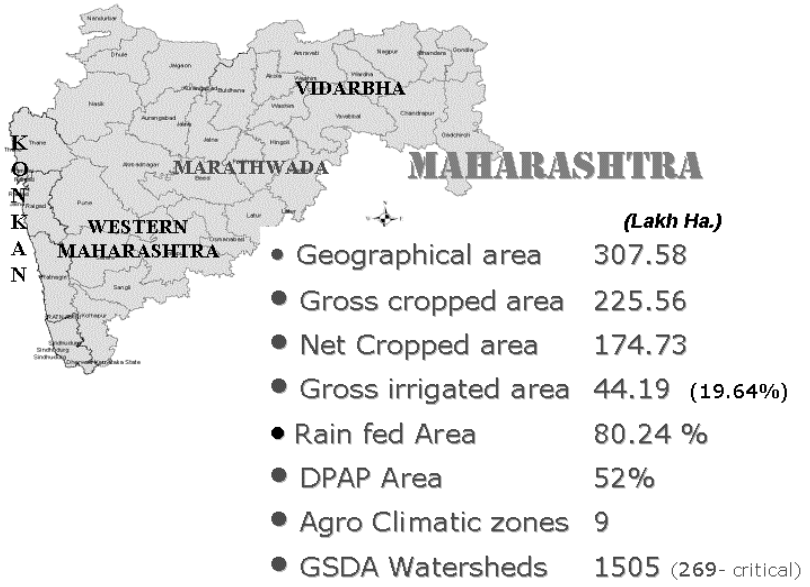
iii) If milk is infected the infection may be transferred to calf.
iv) The actual quantity and quality of milk yield of cow cannot be calculated.
v) The post-partum heat is late.

Village level dairy societies

a) Proper collection arrangements
b) Proper storage arrangements
c) Transporting the milk to the headquarter of the Dudh Sangh
d) Maintenance of proper records
e) Proper payment system for the milk proceeds.
f) Ensuring proper education and training to the dairy farmers
g) Providing guidance to the dairy farmers.

3. MAHARASHTRA STATE DAIRY PERFORMANCE

In India the Uttar Pradesh is the leading milk producer state. Maharashtra ranks 7th in the production of milk. The western division of Maharashtra is the leading division so far as milk production is concerned. Of late the State Govt. is implementing a project through National Dairy Development Board covering Marathwada and Vidarbh Region. This is being done with a view to provide supplementary income to the farmers who are debt burdened and where the incidence of farmer's suicide is more.



4. IMPACT OF DAIRY ACTIVITY ON THE RURAL AREA

The dairy activity is predominant in the rural area and it is looked upon as a source of supplementary income. The dairy activity helps the dairy farmer to avail off liquidity position to meet his daily requirement of cash for various domestic purposes. It helps the dairy farmer a dependable source of income. Particularly it has gathered momentum when because of the vagaries of the monsoon the Indian agriculture sector is receiving set back year after year and that because of the heavy indebtedness the agriculturists are committing suicides. This dairy activity as a source of assured complementary income has been in focus and the agriculturists are persuaded to start this dairy activity. India is having the largest livestock population in the world. However, the productivity of milk is less if we compare it to with the world. The scientists and the dairy farmers are also putting their efforts to increase

the same by adopting new technologies and educating the dairy farmers. Wherever required the Govt. of India is also providing subsidies to the deserving dairy farmers. Even though our per capita daily consumption of milk is showing an increasing trend, compared to the developed countries it is less and we have scope to further improve it. The dairy experts based on the latest data have observed that there is a tremendous scope for the dairy activity in the Indian context and that we should exploit this opportunity.

5. RELEVANCE OF THE STUDY

1) In the Indian agricultural scenario, the livestock play a pivotal role. It is the back bone of the rural India. This dairy activity is pursued as an activity allied to agriculture. The landless labour also dairy activity but their contribution is marginal. The livestock not only produce direct food but it also provides key inputs to agricultural crops. Livestock is an alternative for farm mechanization to a great extent.

2) Normally the agriculturists usually receive the sale proceeds of the crops grown only on harvesting and the consequent marketing of it. Thus, the agriculturists get money seasonally. However, in the case of dairy activity which is an allied activity the agriculturist receives the sale proceeds of the milk at fortnightly or monthly interval which helps the agriculturist to meet his day to day requirement of the liquid cash. The surplus generated also helps him to effect purchases of the agricultural requirement. Income from cropping is highly seasonal. In contrast, small stock, with their high

rates of reproduction and growth, can provide a regular source of income from sales.

3) The agriculturists who are pursuing dairy activity can maintain the fertility of their land by using farm yard manure (FYM). Of late, it has been observed that there is an increasing awareness amongst the agriculturists about adopting the organic farming practices and the produce of organic farming is very much in demand although it is bit costly. This is mainly because of the greater awareness about the quality of the agriculture produce that one gets has hazardous effect on the human body because of the excessive use of chemical fertilizers. In good old days the farmers were maintaining sizable livestock. Now there is a tendency to develop and maintain livestock to reap the benefits of organic farming. In this organic farming the productivity is more and the realization of the crop proceeds is also sizable.

4) Productive livestock can add value to `idle' land. Already, in many parts of the world mixed crop-livestock systems are the norm, but the importance of the livestock component has been overlooked. Even the language we use tends to reinforce this. When we talk about the non-grain parts of cereal crops, we tend to use terms like `crop residues' or `by-products'. Of late, it has been observed that the crop residues are now being used in manufacture of blocks as a solid waste fuel which in turn may adversely affect availability of this material for the dairy animals in course of time. Yet in many farming systems, such as the barley-sheep system of the drier parts of West Asia and North Africa and the tef-based system in the Ethiopian highlands, the

farmers value these `by-products' as much as, if not more, than the grain. `Improved' varieties or production packages that overlook the feeding value of these `residues' will find little favor with the majority of farmers.

6. OBJECTIVES OF THE STUDY

The researcher has a rich experience of the management of the large size dairy unit in Pune district. He is also having a veterinary background being a post graduate in veterinary science. He had also an opportunity to interact various dairy farmers as well as small, medium as well as Managements of large sized dairy projects. Hence, he has rich knowledge of the developments in the dairy activity over the past three decades. Keeping in mind the title of the research, the researcher has formulated the following objectives to be achieved through this research exercise:

a To study the contribution of milch animals in the economic development of the rural area.

b To study the level of awareness of risks in managing the livestock and the remedial measures being adopted by the dairy farmers/Dairy Cooperative societies as the risks eliminate the earnings from the dairy activity.

c To study the grass root level problems faced by these dairy farmers in Pune District and to suggest suitable remedial steps to mitigate these problems.

7. JUSTIFICATION FOR THE OBJECTIVES

The dairy activity as an activity allied to agriculture is having a fair contribution to the economic development

of the rural area. The dairy activity provides ready money at fortnightly or monthly interval which provide liquid money with the dairy farmer which helps him to meet his daily requirement. This gives boost to the other economic activities get going. In this way the maintenance of livestock and the dairy activity is pace setter for the rural economic development. How far this phenomenon is operating at the grass root level is the objective of this research. Therefore, the objective number one justifies this study.

It is also necessary to find out the current level of awareness of the dairy farmers about the maintenance of the livestock, their selection, space requirement, food and feed requirements, health care requirements, and obtaining clean milk and its onward supply to the village level dairy milk producers society etc. What care is required to be taken of the livestock? Which are the agencies that will help in ensuring healthy livestock and increasing milk production? What is the probable solution to tide over the problems encountered in ensuing efficient and profitable dairy activity?

All these aspects are required to be studied right from the grass root level to the middle level functionaries and finally the role that the district level milk producer's unions are performing. In the entire dairy operations, the stakeholder at the district level is the district milk producers Union which collects the milk process it and sells it to the ultimate consumers through their network spread over in the district. In this context the researcher is also would like to study the role played by the particularly in identifying the problems faced at the grass root level by the dairy farmers who are supplying the milk to the village societies and also the problems faced by the village level

societies. This will enable the researcher to suggest practical solutions and assist the stakeholders to come out aggressively to meet the challenge of achieving higher targets of milk production. It is in this context the third objective of this research is relevant.

8. HYPOTHESES OF THE STUDY

The researcher is a veterinary post graduate and has had field experience of management of dairy farming. Therefore, on the basis of the experience that he had gained the researcher has formulated the following hypotheses.

H_1 Dairy activity as allied activity to agriculture significantly contributes to the rural economy despite its attendant risks which need management skills.

H_2 In view of the contribution of dairy to the economic development of the rural area still there is a wide scope to enlarge the dairy a activity.

H_3 The cooperative dairy organizations are playing a key role to financially strengthen the rural farmers.

9. SIGNIFICANCE OF THE STUDY

Over the past two decades the dairy activity has been receiving a set back from viability point of view. The rates of the cattle as well as the dairy feed have been rising at a high rate and at the same there is no corresponding growth in the prices fetched by the milk and milk products. As a result, the dairy activity if not properly managed is becoming an uneconomic activity. Therefore, the dairy farmers are taking risks in running the dairy activity. The

risks are at various stages of the dairy activity. Therefore, the researcher is of the considered view that a critical analysis of risk management involved in the maintenance of livestock and its impact on the rural economy is a very live issue that needs to be studied. On this back drop the researcher is of the view that the research topic is quite significant to the current situation.

10. SCOPE OF THE STUDY

Geographical Scope and selection of the sample area: The geographical scope of study is limited to Dairy units irrespective of ownership (whether private, coop. or corporate sector) functioning in 13 talukas of Pune District. There are 14 Talukas (including Pune City) in the Pune District. However, Pune being a metropolitan city and the dairy activity is relatively less this taluka has been excluded for this research purpose. The table below depicts the talukas of Pune district with number of villages, population as per 2011 census, and the number of dairy societies functioning in those Talukas.

Taluka Wise Number of Villages, Gender Wise Population and dairy societies in the talukas (Position as on 31.3.2016)

Sr. No.	Name of the Taluka	No. of villages	Population as per 2011 census			No. of Dairy units as of April 2017 (Coop. + Pvt.)
			Male	Female	Total	
1	Ambegaon	143	119226	116746	235972	15
2	Baramati	117	221094	208506	429600	8
3	Bhor	195	94158	91958	186116	6
4	Daund	103	196283	184213	380496	22

Sr. No.	Name of the Taluka	No. of villages	Population as per 2011 census			No. of Dairy units as of April 2017 (Coop. + Pvt.)
			Male	Female	Total	
5	Haveli	108	1316346	1119235	2435581	8
6	Indapur	143	198801	184382	383183	8
7	Junnar	183	202360	196942	399302	14
8	Khed	188	237868	212248	450116	11
9	Maval	187	198487	179072	377559	2
10	Mulshi	144	90053	80953	171006	0
11	Pune City	-	1700867	1604021	3304888	67
12	Purandhar	108	119906	115753	235659	4
13	Shirur	117	201152	184262	385414	19
14	Velhe	130	27504	27012	54516	1
	Total	**1866**	**4924105**	**4505303**	**9429408**	**185**

Source: Data collected from Dist. Statistical Office, Pune

The researcher has included all the talukas barring Pune Metropolitan Taluka

1) The taluka identified should be predominantly a rural area.

2) In Pune district Baramati and Indapur Talukas were isolated from the rest of the Talukas so far as registration of District Milk Producers Union and they were given separate registration. Of these two talukas -Indapur taluka unit is non-functional and

hence some of the milk producers' societies in the said taluka supply the milk to Pune District Milk Producers Union and Baramati continued to be a separate unit which is functioning. Therefore, the researcher felt that inclusion of Baramati taluka will add an additional dimension to the study as we can find out if something new, novel has been done by that unit.

Criteria for identifying the taluka wise dairy societies

The dairy societies have been randomly identified observing the following parameters:

1) Dairy Coop. Societies which has the highest collection
2) Dairy Coop. Societies which has the district average collection
3) Dairy Coop. Societies which has the lowest collection

Since this research is also useful to the organization in which the researcher is employed, it was considered to have rather wider coverage of the societies and therefore, over and above the criterion mentioned above, some additional societies have been also included from where major milk supply is received by the District Dudh Sangh.

Thus, while identifying the Talukas for the study care has been taken to ensure a balanced coverage is obtained so that the study will have a representative character.

Keeping the above classification of the agriculturists the researcher has identified minimum of 10 dairy farmers from each category with the exception of large farmers in

which case only 15 dairy farmers have been identified. Care has also been taken to ensure that there is a representation to the dairy farmers who do not hold any landed property. Thus, the total per dairy sample size works out to 750 dairy farmers. Thus, taking overall view the sample talukas, sample societies and the sample dairy farmers have been scientifically identified and the sample is truly representative.

Taluka wise identified dairy societies

				Peak Period		Lean Period	
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	**Peak Period Litter**	**Peak Period Average Litters**	**Lean Period Litters**	**Lean Period Average Litters**
1	**Ambegaon**	1	Bhimashankar Sahkari Dudh Utpadak Sanstha Maryadit, Shindemala	21536	695	13759	444
		2	Kathapur Budruk Sahkari Dudh Utpadak Sanstha Maryadit, Kathapur Budruk	44686	1441	29519	952
		3	Kirantai Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Khadakwadi	164	25	43	18
		4	Radhakrishana Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Jadhavwadi	28645	955	15305	494
		5	Shivshankar Sahkari Dudh Utpadak Sanstha Maryadit, Thorandale	82076	2648	64702	2157
		6	Shri Wyankeshwar Sahakari Dudh Utpadak Sanstha Maryadit, Peth	75324	2511	5686	183
2	**Bhor**	7	Nere Vibhag Sahakari Dudh Utpadak Sanstha Maryadit, Nere	32354	1044	9006	291

				Peak Period		Lean Period	
Sr. No.	Taluka	No.	Name of the Dudh Society and village name	Peak Period Litter	Peak Period Average Litters	Lean Period Litters	Lean Period Average Litters
		8	Padmavati Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Hamas	8362	279	945	30
		9	Utarwali Vibhag Sahakari Dudh Utpadak Sanstha Maryadit, Utarwali	17287	558	10992	366
3	**Daund**	10	Pandurang Sahakari Dudh Utpadak Sanstha Maryadit, Chandgudewadi-delwadi	11032	368	5492	177
		11	Sushila Mahila Sahakari Dudh Utpadak Sanstha Maryadit, Khanota	357667	11538	159832	5708
4	**Haveli**	12	Gopal Sahakari Dudh Utpadak Sanstha Maryadit, Tilekarwadi	6893	222	2508	81
		13	Kamdhenu Mahila Sahakari Dudh Utpadak Sanstha Maryadit, Urulikanchan	1844	61	1140	41
		14	Rajhans Sahkari Dudh Utpadak Sanstha Maryadit, urlikanchan	2059	69	1152	38
5	**Indapur**	15	Avinash Sahakari Dudh Utpadak Sanstha Maryadit, Indapur	88850	2866	5255	170
		16	Ganesh Sahkari Dudh Utpadak Sanstha Maryadit, Kurvali	40246	1298	11318	365
		17	Rajendra Sahkari Dudh Utpadak Sanstha Maryadit, Bambadwadi	27568	889	8383	270
6	**Junnar**	18	Shri Biroba Maharaj Ssahkari Dudh Utpadak Sanstha Maryadit, Vadgaon Kandali	116425	3756	94995	3167
		19	Kalambjai Sahkari Dudh Utpadak Sanstha Maryadit,	19053	615	11483	383

				Peak Period		Lean Period	
Sr. No.	Taluka	No.	Name of the Dudh Society and village name	Peak Period Litter	Peak Period Average Litters	Lean Period Litters	Lean Period Average Litters
			Hivare Turf Narayangaon				
		20	Shri Kashinath Baba Sahkari Dudh Utpadak Sanstha Maryadit, Khanapur	10186	329	6372	228
		21	Muktai Sahkari Dudh Utpadak Sanstha Maryadit, Pargaon Tarphe Madh	17073	551	5072	181
		22	Kandali Nagadwadi Sahkari Dudh Utpadak Sanstha Maryadit, Nagadwadi	16621	554	13453	448
		23	Narayangaon group Sahkari Dudh Utpadak Sanstha Maryadit, Narayangaon	18540	618	11804	393
		24	Shivshakti Sahkari Dudh Utpadak Sanstha Maryadit, Vadgaon Sahani	24887	803	19767	659
		25	Shri Datta Sahkari Dudh Utpadak Sanstha Maryadit, Hiware-Narayangaon	80761	2605	59227	1974
		26	Shri Hanuman Sahkari Dudh Utpadak Sanstha Maryadit, Warcha Zap	12764	425	10085	325
		27	Vasantdada Sahkari Dudh Utpadak Sanstha Maryadit, Sutar thike(Kandali)	19308	623	15947	514
		28	Weerbhadra Sahkari Dudh Utpadak Sanstha Maryadit, Pangari Terf Madh	15318	494	6163	220
7	**Khed**	29	Balasaheb Shete Sahkari Dudh Utpadak Sanstha Maryadit, Wakad	103884	3351	24833	801

				Peak Period		Lean Period	
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	**Peak Period Litter**	**Peak Period Average Litters**	**Lean Period Litters**	**Lean Period Average Litters**
		30	Bhairavnath Sahkari Dudh Utpadak Sanstha Maryadit, Khopewadi	2901	94	1027	34
		31	Bhairavnath Sahkari Dudh Utpadak Sanstha Maryadit, Koye	3510	117	732	24
		32	Gurukrupa Sahkari Dudh Utpadak Sanstha Maryadit, Chinchoshi	6513	217	3380	113
		33	Gurukrupa Sahkari Dudh Utpadak Sanstha Maryadit, Pabe	1550	50	1395	50
		34	Jay Hanuman Sahkari Dudh Utpadak Sanstha Maryadit, Chandus	7777	251	2396	77
		35	Mahadeo Sahkari Dudh Utpadak Sanstha Maryadit, Phansewadi	3370	112	1995	71
		36	Mauli Sahkari Dudh Utpadak Sanstha Maryadit, Sopawasti	17667	570	2143	77
		37	New Bhiravnath Sahkari Dudh Utpadak Sanstha Maryadit, Kaman Barapati	9163	296	3968	142
		38	Sadichha Sahkari Dudh Utpadak Sanstha Maryadit, Shel Pimpalgaon	147826	4769	96410	3110
8	**Maval**	39	Bhairvnath Sahkari Dudh Utpadak Sanstha Maryadit, Ozarde	661	21	306	11
		40	Sudha Sahkari Dudh Utpadak Sanstha Maryadit, Sudumbare	21936	731	16919	546
		41	Trimurti Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Inglun	10416	336	1766	63

				Peak Period		Lean Period	
Sr. No.	Taluka	No.	Name of the Dudh Society and village name	Peak Period Litter	Peak Period Average Litters	Lean Period Litters	Lean Period Average Litters
		42	Trimurti Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Wadeshwar (Shindewadi)	2769	92	784	25
9	**Mulshi**	43	Jamgaon Vibhag Bhairavna Sahkari Dudh Utpadak Sanstha Maryadit, Jamgaon	13078	436	6292	203
10	**Purandhar**	44	Bhairvanath Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Singapur	18056	582	8930	288
		45	Laxmi mahila Sshkari Dudh Utpadak Sanstha Maryadit, Jawlarjun	12750	425	6550	211
		46	Shivshambo Sshkari Dudh Utpadak Sanstha Maryadit, Dhalewadi	12978	419	8162	263
		47	Shri Ganesh Sahkari Dudh Utpadak Sanstha Maryadit, Bhivari	16768	559	8117	271
11	**Shirur**	48	Bhagyashri Sahkari Dudh Utpadak Sanstha Maryadit, Pimpalsuti	12661	408	1479	49
		49	Rajmata Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Rajangaon Sandas	23622	762	3000	100
		50	Sainikbhau Dhokale Sahkari Dudh Utpadak Sanstha Maryadit, Karandi	126879	4093	106862	3447
		51	Savitri Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Sonesangavi	14865	480	9809	350
		52	Shimjai Sahkari Dudh Utpadak	20567	663	15021	501

				Peak Period		Lean Period	
Sr. No.	Taluka	No.	Name of the Dudh Society and village name	Peak Period Litter	Peak Period Average Litters	Lean Period Litters	Lean Period Average Litters
			Sanstha Maryadit, Lokhandewasti, Ranjangaon				
12	Velha	53	Vinzar Sahkari Dudh Utpadak Sanstha Maryadit, Vinzar	3687	119	196	6
		54	Shri Jakhanimata Sahkari Dudh Utpadak Sanstha Maryadit, Antroli	15141	488	395	13
		55	Shri Jananiaai Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Rule (Halandewadi)	4333	140	258	8
13	Baramati	56	Bormalnath Dudh Utpadak Sanstha Maryadit, Dhakale	4650	150	2108	68
		57	Hanuman Dudh Utpadak Sanstha Maryadit, Khamgalwadi	4340	140	1798	58
		58	Panchartna Dudh Utpadak Sanstha Maryadit, Murti	12400	400	5732	185
		59	Someshwar Dudh Utpadak Sanstha Maryadit,	3100	100	1488	48
		60	Shri Siddheshwar Dudh Utpadak Sanstha Maryadit,	51150	1650	27559	889

Source: Field survey data collected from District Deputy Registrar of Coop. Societies, Pune.

Sample Selected

Society wise identified respondents

Identified Dairy Farmers				
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	
1	**Ambegaon**	1	Bhimashankar Sahkari Dudh Utpadak Sanstha Maryadit, Shindemala	15

Identified Dairy Farmers				
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	
		2	Kathapur Budruk Sahkari Dudh Utpadak Sanstha Maryadit, Kathapur Budruk	15
		3	Kirantai Mmahila Sahkari Dudh Utpadak Sanstha Maryadit, Khadakwadi	10
		4	Radhakrishana Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Jadhavwadi	15
		5	Shivshankar Sahkari Dudh Utpadak Sanstha Maryadit, Thorandale	10
		6	Shri Wyankeshwar Ssahkari Dudh Utpadak Sanstha Maryadit, Peth	10
2	**Bhor**	7	Nere Vibhag Ssahkari Dudh Utpadak Sanstha Maryadit, Nere	15
		8	Padmavati Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Hamas	10
		9	Utarwali Vibhag Ssahkari Dudh Utpadak Sanstha Maryadit, Utarwali	15
3	**Daund**	10	Pandurang Ssahkari Dudh Utpadak Sanstha Maryadit, Chandgudewadi-delwadi	15
		11	Sushila Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Khanota	15
4	**Haveli**	12	Gopal Ssahkari Dudh Utpadak Sanstha Maryadit, Tilekarwadi	15
		13	Kamdhenu Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Urulikanchan	10
		14	Rajhans Sahkari Dudh Utpadak Sanstha Maryadit, urlikanchan	10
5	**Indapur**	15	Avinash Ssahkari Dudh Utpadak Sanstha Maryadit, Indapur	15
		16	Ganesh Sahkari Dudh Utpadak Sanstha Maryadit, Kurvali	10
		17	Rajendra Sahkari Dudh Utpadak Sanstha Maryadit, Bambadwadi	15
6	**Junnar**	18	Shri Biroba Maharaj Ssahkari Dudh Utpadak Sanstha Maryadit, Vadgaon Kandali	15

Identified Dairy Farmers				
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	
		19	Kalambjai Sahkari Dudh Utpadak Sanstha Maryadit, Hivare Turf Narayangaon	15
		20	Shri Kashinath Baba Sahkari Dudh Utpadak Sanstha Maryadit, Khanapur	15
		21	Muktai Ssahkari Dudh Utpadak Sanstha Maryadit, Pargaon Tarphe Madh	15
		22	Kandali Nagadwadi Ssahkari Dudh Utpadak Sanstha Maryadit, Nagadwadi	15
		23	Narayangaon group Ssahkari Dudh Utpadak Sanstha Maryadit, Narayangaon	10
		24	Shivshakti Ssahkari Dudh Utpadak Sanstha Maryadit, Vadgaon Sahani	10
		25	Shri Datta Ssahkari Dudh Utpadak Sanstha Maryadit, Hiware-Narayangaon	15
		26	Shri Hanuman Ssahkari Dudh Utpadak Sanstha Maryadit, Warcha Zap	10
		27	Vasantdada Ssahkari Dudh Utpadak Sanstha Maryadit, Sutar thike(Kandali)	10
		28	Weerbhadra Ssahkari Dudh Utpadak Sanstha Maryadit, Pangari Terf Madh	10
7	**Khed**	29	Balasaheb Shete Ssahkari Dudh Utpadak Sanstha Maryadit, Wakad	15
		30	Bhairavnath Ssahkari Dudh Utpadak Sanstha Maryadit, Khopewadi	10
		31	Bhairavnath Ssahkari Dudh Utpadak Sanstha Maryadit, Koye	10
		32	Gurukrupa Ssahkari Dudh Utpadak Sanstha Maryadit, Chinchoshi	10
		33	Gurukrupa Ssahkari Dudh Utpadak Sanstha Maryadit, Pabe	10
		34	Jay Hanuman Ssahkari Dudh Utpadak Sanstha Maryadit, Chandus	10

Identified Dairy Farmers				
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	
		35	Mahadeo Ssahkari Dudh Utpadak Sanstha Maryadit, Phansewadi	10
		36	Mauli Ssahkari Dudh Utpadak Sanstha Maryadit, Sopawasti	15
		37	New Bhiravnath Ssahkari Dudh Utpadak Sanstha Maryadit, Kaman Barapati	10
		38	Sadichha Ssahkari Dudh Utpadak Sanstha Maryadit, Shel Pimpalgaon	15
8	**Maval**	39	Bhairvnath Sahkari Dudh Utpadak Sanstha Maryadit, Ozarde	10
		40	Sudha Sahkari Dudh Utpadak Sanstha Maryadit, Sudumbare	15
		41	Trimurti Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Inglun	10
		42	Trimurti mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Wadeshwar (Shindewadi)	10
9	**Mulshi**	43	Jamgaon vibhag bhairavna Sahkari Dudh Utpadak Sanstha Maryadit, Jamgaon	15
10	**Purandhar**	44	Bhairvanath Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Singapur	15
		45	Laxmi Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Jawlarjun	10
		46	Shivambu Ssahkari Dudh Utpadak Sanstha Maryadit, Dhalewadi	10
		47	Shri Ganesh Ssahkari Dudh Utpadak Sanstha Maryadit, Bhivari	15
11	**Shirur**	48	Bhagyashri Ssahkari Dudh Utpadak Sanstha Maryadit, Pimpalsuti	10
		49	Rajmata Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Rajangaon Sandas	15
		50	Sainikbhau dhokale Ssahkari Dudh Utpadak Sanstha Maryadit, Karandi	15
		51	Savitri Mahila Sahkari Dudh Utpadak Sanstha Maryadit, Sonesangavi	15

Identified Dairy Farmers				
Sr. No.	**Taluka**	**No.**	**Name of the Dudh Society and village name**	
		52	Shimjai Sahkari Dudh Utpadak Sanstha Maryadit, Lokhandewasti, Ranjangaon	10
12	**Velha**	53	Vinzar Sahkari Dudh Utpadak Sanstha Maryadit, Vinzar	10
		54	Shri Jakhanimata Ssahkari Dudh Utpadak Sanstha Maryadit, Antroli	15
		55	Shri Jananiaai Mahila Ssahkari Dudh Utpadak Sanstha Maryadit, Rule (Halandewadi)	10
13	**Baramati**	56	Bormalnath Dudh Utpadak Sanstha Maryadit, Dhakale	15
		57	Hanuman Dudh Utpadak Sanstha Maryadit, Khamgalwadi	10
		58	Panchartna Dudh Utpadak Sanstha Maryadit, Murti	15
		59	Someshwar Dudh Utpadak Sanstha Maryadit, Someshwar	10
		60	Shri Siddheshwar Dudh Utpadak Sanstha Maryadit, Pandhare	15
			Total respondents for this study	750

Operational Scope

Parameters decided for selection of the Talukas

1) All the 13 taulkas barring Pune Metropolitan taluka have been identified for this research.
2) The livestock population in the Taluka and the number of dairy societies in it.

Primary Data: The primary data has been collected from the principle stakeholders in the dairy activity i.e. dairy farmers and the taluka level milk producers' societies. The primary milk producers maintain the livestock and the taluka level milk producers' societies collect the milk and send it to the District Dairy Union.

Secondary Data: The researcher has visited various libraries and research centers to collect the secondary data viz. Gokhale Institute of Politics and Economics, Pune, Pune, office of the Commissioner for Cooperation & Registrar of Cooperative Societies, Pune, Commissionarate of Animal Husbandry, Pune Reserve Bank of India's College of Agricultural Banking – Pune, District Statistical Office, Pune.

Entire primary data was collected through interview schedules and through structured questionnaires. Researcher has prepared a detailed and comprehensive questionnaire and interview schedules of different types to collect primary data.

I. Questionnaire for Secretary / Board of Directors of Milk societies
II. Questionnaire for dairy farmers who supply milk to the dairy society.

The questionnaires and interview schedule were prepared in Marathi language. Copies of the questionnaires and interview schedules duly translated into English are given at the end of the thesis in Annexure.

Statistical Techniques for analysis of Data: The researcher has used simple statistical techniques to analyse the data collected for the purpose of the study. The following statistical tools have been used:-

For the purpose of analyzing the primary data collected the researcher has used standard statistical tools namely, percentage, diagrams and graphs, descriptive Statistics which includes mean, Standard Deviation etc. For validation of the hypotheses formulated originally for

this research the researcher has used Chi-square test which has been briefly described hereunder:

CHI-squared Test: This test is used to determine whether hypothesized results are verified by an experiment. This approach consists of four steps: (1) state the hypotheses, (2) formulate an analysis plan, (3) analyze sample data, and (4) interpret results. Every hypothesis test requires the analyst to state a null hypothesis (H_0) and an alternative hypothesis (H_1). The hypotheses are stated in such a way that they are mutually exclusive. That is, if one is true, the other must be false; and vice versa.

12. PERIOD COVERED BY THIS RESEARCH

The temporal scope of this study is taken as financial years **2010-11 to 2014-15.** However, wherever possible the data for the year 2015-16 has also been incorporated to make this research up to date.

13. LIMITATIONS OF STUDY

Following are the limitations of this study:

1) The study is limited for the period of 2010-11 to 2014-15.
2) Present study is restricted only to Dairy Coop Societies in 13 Talukas of Pune District.
3) This study is limited mainly to dairy farmers maintaining livestock for dairy purpose as well as dairy societies.

On account of above limitations, researcher feels that the findings of this work relating to Milk societies in thirteen identified Talukas and 60 village dairy cooperative societies of Pune Districts may or may not be generalized

but those can well be regarded as guiding factor. . However, researcher has kept himself away from bias with a view to make analysis subjective.

14. CHAPTER SCHEME

Chapter I –Introduction: In this chapter the researcher has covered the introduction of the research topic. This covered India's demographic data, role of agriculture in the context of contribution to Gross Domestic Product, Role of Dairy as a complementary activity allied to agriculture, the dairy scenario at various level i.e. International, National, State level as well as the district level. It has covered conceptual framework, what is risk, need for managing risks in livestock maintenance, various activities to agriculture, various stake holders in dairy activity, challenges before the Indian dairy, and prospects of dairy activity in general and livestock maintenance in particular. etc.

Chapter II –Research Methodology : This chapter covered the research methodology in which the researcher has brought out the research problem, significance of the research, objectives of the research, justification for the objectives, hypotheses formulated and its justification, research universe, type of research, categories of the respondents, sample selection, identified sample and its justification, collection of data, tools of data collection, data analysis and presentation, statistical tools used, scope of research, limitation of research, chapter scheme adopted.

Chapter III –Review of Literature: In this chapter the researcher has presented the brief reviews of the various types of literature related to the research topic. The researcher has presented the reviews category wise: 1)

Previous research, (Ph. D. theses, Research Papers, 2) Reports, 3) Books 4) Journals and Periodicals 5) Newspaper articles, 6) websites. The researcher has also stated in this chapter knowledge gained and the research gap.

Chapter IV –Profile of Pune District and the identified Societies: This chapter covered the brief review of the research universe carved out for this researcher, in which a broad review of Pune district mainly concerning agriculture and dairy scenario, the talukas identified for this research and their brief profiles. This helps to understand the observations, findings and suggestion in right perspective.

Chapter V -Analysis and Interpretation of the Data: In this chapter the primary data collected has been analysed using various statistical tools and has been presented in this chapter. Comments on each of the item presented have also been incorporated in this chapter. This chapter also covers the validation of the hypotheses using statistical techniques.

Chapter VI – Findings and Suggestions & Conclusion: In this chapter the researcher has recorded his observations on the analysed data and has also offered suggestions/recommendations wherever possible. The researcher has also presented substantiation/ validation of the hypotheses formulated, and has also incorporated scope for further research and conclusion.

15. FINDINGS

Following are the findings based on the interpretation of the data presented in Chapter V.

Relating to Milk Producers

a) 75.6% of the respondents have reported that the dairy activity has helped them in increasing their income level. It means that the dairy activity is certainly an activity allied to agriculture which helps the dairy farmers to supplement their income level. It will be worthwhile to state here that the dairy activity also provides employment to the villagers where disguised unemployment prevails.

b) It is observed that 83.07% of the respondents have stated that apart from satisfying their own consumption needs of the milk, the surplus milk sold also fetches them sizable income.

c) It has been observed that the over whelming majority (96.4%) of the dairy farmers have reported that they get adequate F.Y.M. from their dairy activity which adds to the economic viability of their dairy activity.

d) 27.87% of the respondents have reported that they have biogas plant. 22.67% of the respondents have preferred to be neutral. 49.46% of the respondents are either disagreeing or strongly disagreeing with the statement that as they do not have biogas plant. This is possible because those dairy farmers may not have minimum required dairy animals

e) It has been observed that 86.7% of the respondents stated that their society gives them competitive rates for their milk supplies.

f) It has been observed that 86% of the respondents have reported that the payment of sale proceeds of the milk supplied to the dairy society is made regularly.

g) Majority of the respondents (54.57%) have reported that they do not get prompt loan from the local bank branch for purchase of the dairy animals. This position needs to be further probed and the extension officer and block development officer should sort out this issue at the Block Level Consultative Committee meeting.

h) It is observed that 75.87% respondents have stated that they get advice from the dairy society for increasing the milk.

i) It has been observed that 80.53% of the respondents stated that since the establishment of the dairy in their village the villager's income level has gone up. It has also been observed that in the state of Maharashtra the farmer's suicides are more in the Vidarbha where the agriculture is solely dependent on the vagaries of monsoon and the farmers are by and large not pursuing any activity allied to agriculture like dairy. The Government of Maharashtra is now pursuing these farmers to start some economic activity allied to agriculture and is focusing on the establishment of dairies in this region. E.g. now Mother Dairy project has come in Vidarbha.

j) 65.47% of the respondents concurred with the statement that the dairy activity has led to the increase in the employment potential for the youth in the villages.

k) It has been observed that 71.2 per cent of the respondents have at least part of their total holding

has irrigation facility and that they are cultivating cash crops.

l) It has been observed that 80.66% of the respondents have stated that their society organizes training programs for their members (dairy farmers). This is a good sign.

m) 57.73% of the respondents have reported that they maintain separate accounts for the dairy activity. It shows that they are cost conscious of their business activity. Still 34.94% respondents do not maintain separate accounts. The rest remained neutral. It will be in their own interest to maintain such separate account which will enable them to understand the outcome of their business activity.

n) It has been observed that 60.53% of the respondents have confirmed that after the establishment of the dairy in the society, inflow of money has increased substantially and that the purchasing power of the villagers has also increased. This has resulted in lots of welfare activities have started in the villages.

o) For maintaining the proper health of the dairy animals' guidance and support of the veterinary doctor is essential. The Government veterinary doctors are visiting the villages for this purpose. It is observed that 60.53% of the respondents have vouched that the govt. veterinary doctors are regularly visiting their villages. In addition to these govt. efforts even the Katraj Dairy also provides such a veterinary support to the dairy farmers through their milk collection societies.

p) For successful maintaining the dairy animals it is necessary that the artificial insemination services are available in the vicinity of the villages. (Say about 5 Kms. radius). It has been revealed that

84.4% of the respondents have confirmed that such a service is available easily.

q) One of the requirements for maintaining the dairy animals is the availability of the cattle feed of good quality. If this is available locally the dairy farmer is not required to move about. It is observed that 76.67% of the respondents have confirmed that they get cattle feed supply from their dairy society.

r) It has been observed that 66.53% of the respondents have confirmed that chaff cutting services are available to the dairy farmers in the vicinity of their location. This processed fodder dry and wet certainly adds to the advantage of the milking animals.

s) It has been observed that 72.94% of the respondents have reported that the milk collection arrangements are satisfactory.

t) It has been observed that 72.94% of the respondents have reported that they resort to retain part of the surplus generated from the dairy activity in constructing good quality shed/s for the dairy animals. This is a good sign of running the business.

u) It has been observed that 60.13% of the respondents either agree or strongly agree with the statement that the rate given by the private dairy societies is higher than the rate given by the Dudh Sangh. This situation varies from time to time. Because of the Govt. of Maharashtra's directions, the case is presently reverse. The govt. of Maharashtra has constituted a committee to work out the modalities to decide the rate of the milk to be offered to the dairy farmer.

v) It is observed that hardly 49.06% of the respondents reported that the sale proceeds of the milk supplied to the dairy society is credited to their bank account.

w) It is observed that 58.03% of the respondents have not insured their milch animals. This is quite alarming figure. It means the general insurance companies have a lot to be done in this regard. Certainly, it is in the interest of the dairy farmer to insure the milch animals. There is need to create awareness about the ease and benefits from the insurance policy.

x) It has been observed that the incidence of cattle insurance is very low. Therefore, it will not be worthwhile to jump to any conclusion on the basis of the available data.

y) It is observed that over whelming majority (84.26%) respondents have adequate water source to run their dairy activity efficiently.

z) 87.74% of the respondents agreed or strongly agreed with the statement that dairy activity enables them to have liquid cash for their day to day requirements. Agriculture is a seasonal activity wherein they get money when their produce is harvested. This leads to a cash crunch for the agriculturists which problem is eased out by the dairy activity which make them available hard cash at regular small interval of a fortnight.

aa) It is observed that 73.6% of the respondents have either agreed or strongly agreed that because of the profitability of the dairy activity the villagers are gradually increasing the strength of the livestock.

bb) It is observed that 94.6% of the respondents have vouched that there is a very good demand for the milk and its products.

cc) It is observed that there is over whelming majority of the respondents (94.13%) who have observed that because of the increase in the population as well as

the purchasing power of the masses the demand for value added milk products has been increased.

dd) It is observed that during the past five years period the per head consumption of milk has been increased. This view has been expressed by 76.13% of the respondents.

ee) In the urban area there is a demand for good quality milk supply and that they are willing to pay higher price for it. This view has been expressed by 93.33% of the respondents.

ff) It is observed that during the festival season there is a greater demand for the milk and the milk products. This is the view of 96.26% of the respondents who have agreed or strongly agreed with the statement.

gg) It is observed that 89.33% of the respondents have confirmed that if the dairy activity is managed commercially it fetches good return.

hh) 77.47% of the respondents have confirmed that the dairy activity in their family is being managed by the female members in the family.

ii) It is observed that 61.23% of the respondents have stated that they either disagree or strongly disagreed with the statement that now the raising bank loan is easy and that the rate of interest charged is also low.

jj) It has been observed that 57.74% of the respondents have expressed that they have intention to expand their dairy activity by purchasing additional cattle. There is need to educate the dairy farmers about the profitability of the dairy activity, availability bank finance, etc. so that he will be motivated to buy additional milch animals.

kk) It is observed that 78.66% of the respondents have stated that being a member of the dairy society they

get guidance from the society for maintaining the dairy animals.

ll) It is observed that the managing committee of the dairy society understands the member's problems in right perspective and that they try to solve those problems. This has been stated by the 85.6% of the respondents.

mm) It is observed that the dairy societies have made arrangements to supply cattle feed as well as the medicines required for the livestock. This was the feedback given by 70.67% of the respondents.

nn) It is observed that majority of the respondents (72.27%) have stated that their society should deduct the loan instalment from the sale proceeds of the milk from time to time and credit it directly to their loan account with the financing bank.

oo) It is observed that the majority of the members (80.80%) have either agreed or strongly agreed with the statement that deduction of the loan instalments from the sale proceeds of the milk supplied and depositing it to the loan account by the society from time to time will give the members relief in interest charged by the bank.

pp) Majority of the members (79.73%) have expressed that the society staff should extend them assistance in putting insurance claim with the insurance company and to chase it for its early settlement. The expectation is quite normal.

qq) It is observed that in the villages there is a frequent interruption in power supply which poses hardships to the dairy farmers. Over 91% of the respondents have stated that there should be improvement in the power supply and it should be without any interruption.

rr) 79.47% of the respondents have either agreed or strongly agreed with the statement that they are getting competitive rates for the milk supplied by them to the dairy society. At present the dairy farmers supplying the milk to the dairy societies are getting better rate even as compared to the private dairy organizations. Besides the rate given for the milk, the dairy farmers supplying the milk to the dairy society, they also get at the end of the year 'price difference' which adds to their income.

ss) It is observed that the majority of the members (91.6%) expect that the society should provide them information relating to the various Government schemes concerning the dairy activity so that the members may take benefit of those schemes.

tt) It is observed that the members of the dairy society expect that their society should buy the inputs like cattle feed and the commonly required medicines for the livestock and make those available to their members. This was the view of 93.8% of the respondents.

uu) It is observed that majority of the dairy farmers are unaware of the various types of semen available in the market. As a result, they are solely dependent on whatever the semen the veterinary staff uses. If proven quality semen is used naturally it will have a long-term effect on the quality of the cattle and its milk production.

vv) It has been observed that majority of the respondents (77.07%) are aware of the benefit of the regular medical check-up of their livestock and that they observe it strictly.

ww) It has been observed that majority of the respondents (89.87%) do follow hygienic precautions

while milking the cows or while supplying the milk to the dairy society.

xx) It is observed that the dairy societies conduct training programs for their members. This has been stated by a majority of the respondents (93.6%).

yy) It is observed that majority of the respondents are in agreement with the statement that apart from increase the cattle size, there are ways and means through which the milk production can be increased.

zz) It is observed that majority of the respondents (83.33%) have earmarked a part of their agricultural land for cultivation of green fodder which is a vital input for milk production.

aaa) It is found that majority of the respondents (91.6%) are aware of the importance of maintenance of cleanliness in the cattle shed.

bbb) It is found that majority of the respondents (82.93%) are aware of the need to keep the cattle shed cool during summer using various techniques such as use of sprinklers on the roof top during the Sunshine.

ccc) It was found that a majority of the respondents (52.7%) were aware of the variety of the semen and that they use high quality semen, irrespective of the cost consideration, for improving the production of milk.

ddd) It was observed that majority of the respondents (85.86%) are traditional farmers and that they have adequate knowledge about precautions to be taken on the health and management of the livestock.

eee) During the artificial insemination operation extra precautions are required to be taken. 57.6% of the respondents have the knowledge of those precautions.

fff) It was found that majority of the respondents are aware of the care to be taken during the pregnancy of the cattle.

ggg) It was observed that majority of the respondents (92.54) observe cleanliness while conducting all the dairy operations.

hhh) It was observed that majority of the respondents give periodical vaccination to their cattle and that they stand to benefit by that.

Relating to Village Dairy Coop. Societies

a) It has been observed that 76% of the respondents have confirmed that their society organizes training programs for their milk supplying members.

b) It has been observed that only 40% of the respondents have stated that their society assists the financing banks for recovery of their loans through payment of sale proceeds. 22% of the respondents have opted to be neutral. It shows that one of the reasons for not promptly considering the dairy loan proposals by the bank is non-cooperation of the societies in their recovery efforts.

c) It is observed that 78% of the respondents either agreed or strongly agree with the statement that there is a fair competition amongst members of the society to increase the milk supply.

d) It is observed that there is a fair competition amongst the societies in Taluka for maximum collection of milk. (64%). The district Dudh Sangh (Katraj Dairy has instituted a prize for highest collection which motivates the societies to increase their milk collection.

e) It has been observed that there is delay in the settlement of the cattle insurance claims by the

insurance companies. 48% of the respondent societies have either disagreed or strongly disagreed with the statement.

f) It has been observed that hardly 22% of the societies have reported that the banks are sanctioning dairy loans promptly. Similar view is also expressed by the dairy farmers on this statement. It means that there is delay in according sanction to the dairy loan proposals by the branches. Dairy loans are relatively small loans and bank branches are authorized to sanction these loans. Therefore, this issue can be sorted out without much difficulty. A suitable suggestion has been given in the following suggestions.

g) It is observed that 94% of the respondent societies have stated that they provide the Government schemes in operations relating to dairy activity to their members. But on a similar statement 90% of the respondents have expressed that the societies should inform the members the Government schemes in operation. It means the responses are contradicting and therefore, a suitable suggestion has been incorporated herein below.

h) It was observed that 74% of the responding dairy societies have stated that their suggestions for any improvement in the functioning of the society are taken well care of by the banks as well as the district dairy union. Only 12% respondents remained neutral and the 14% of the respondent societies have either disagreed or strongly disagreed with the statement. If this is the situation, the dairy societies may take up the issue of delayed sanctioning of the dairy loans by the banks and sort it out for mutual benefits.

i) It was observed that 76% of the dairy societies have willingness to make provision of cattle feed and routine medicines required for the livestock to ensure supply of quality feeds at reasonable costs and at the same time make some earnings from the bulk buying of those inputs. Some of the societies are already attending to this supplementary requirement of the members.

j) It is observed that there is a good rapport between the District Dairy Union (Katraj Dudh Dairy) and the primary dairy societies. This is revealed from the fact that 86% of the responding societies stating they get good cooperation from Katraj Dudh Dairy for sorting out their problems and for increasing the milk supply. This is a good position and the same should be strengthened further for mutual interests.

16. SUGGESTIONS

During the course of this research and the findings that have come to surface, some suggestions for improving the situation have been crystalized and those have been presented hereunder. The suggestions have been classified for the clarity purpose on the basis of stakeholders of the dairy development activity in the rural areas.

Stakeholder: Dairy Farmers

a) In view of the fact that the biogas plant can generate required energy for cooking and for domestic lighting, it is suggested that those farmers who are currently not having biogas installation may be encouraged to go in for biogas which will enable them to get gas as well as light at no cost. The Government does give subsidy for the installation of

biogas plant. The dairy activity has turned out to be a profitable economic activity and hence the farmers who do not have bear minimum required dairy animals may go in for purchase of requisite dairy animals for which finance is also available from the banks in the rural area. Alternately, those farmers who do not have minimum required number of livestock for going in for gobar gas plant can come together and have a community gobar gas plant and make use of the energy generated. This is possible because of the proximity of the residences in the villages.

b) It is suggested that the dairy farmers who have part of their land under irrigation should also cultivate quality green fodder at least for their own requirement so that the assured good quality green fodder will have positive impact on the milking of their cows/she buffaloes. Here it will be appropriate to make a mention that in a recent telecast on digital media, it has shown that some youth have started cultivating specifically for the milking animals' quality green grass and they are getting good remuneration from the activity.

c) From the above finding it has been revealed that still a large portion of the dairy farmers do not maintain separate accounts for the dairy activity. In order to understand the areas to control the costs such account writing is very much helpful. Therefore, the dairy society as well as during the training programs conducted by the dairy society thrust be given to this issue and the dairy farmers be made aware of the benefits of such maintaining the separate accounts for the dairy activity.

d) The dairy sector is the backbone of the rural economy which helps the rural economy to grow at a

faster rate. The dairy farmers are not well equipped with the scientific knowledge for conducting the activity. They are pursuing the dairy activity on the traditional lines. Therefore, the need of the hour is to see that the dairy farmers are required to be properly inducted with the basic scientific knowledge. The Dairy Union at the district level in collaboration with the Animal Husbandry Department at the district level should prepare a capsule program for the grass root level dairy farmers and create awareness amongst them to pursue the dairy activity on the scientific lines so as to ensure its sustainability and increasing the clean milk output.

e) After a reasonable gap, these farmers be also given orientation training of short duration and enhance their knowledge in increasing the milk productivity of the livestock that they raise.

A brief skeleton of these two training programmes have been prepared and are incorporated in this thesis as Annexure A. This can very well serve the back ground for a detailed debate amongst the expert in Livestock management, Accounts People, Insurance Representatives and refine the training program. These programmes be held with local medium of instruction. (Marathi/ Kannad as the case may be).

f) The feedback received has indicated that there is scope for increasing the dairy activity and 57.74 % of the respondents are intending to enlarge their dairy activity.

Stakeholder: Village Milk Producers Dairy Coop. Societies

a) It is suggested that the dairy societies should also motivate the dairy farmers to go in for purchase of additional dairy animals and to install biogas plant at the place where the dairy animals are housed. As an organization the dairy society's official can take a lead in this regard and approach the govt. extension officials in the block to push up their biogas plant scheme in the villages.

b) In fact, dairy society is an organization in the village which has control over distribution of the sale proceeds of the milk supplied by the members of the society. It is something like performing corporate social responsibility on the lines of the corporates, under the 2013 Company Act amendment. The society can chalk out a program of activities those can benefit the village and with the proper authority from its members collect nominal amount from out of the milk sale proceeds and adding a part of their profit can certainly undertake small projects beneficial for the village itself. E.g. toilets in the schools, establishment of library, health check-up camps, awarding the talented students securing highest marks in the 10^{th} and 12^{th} standard which will motivate the other students, etc.

c) Cattle feed is a major requirement of the dairy farmers. At present number of societies do make arrangements for the supply of cattle feed to their members and deducting the charges from the sale proceeds of the milk supplied by the member. The researcher is of the view that in every taluka the dairy milk societies can come together and start their own cattle feed manufacturing unit so that

they can ensure that good quality cattle feed is available for their members at still cheaper rates. This will also be a cooperative venture. It will provide employment opportunities to the youth in the rural areas both direct and indirect employment.

d) In view of the fact that the Govt. of India is encouraging cashless transactions as also to inculcate the habit of banking amongst the villagers it is suggested that the Dudh Societies should also make payments to the supplier's bank account.

e) It is suggested that the Cooperative Dairy Societies can do a lot in respect of insuring the dairy animals. The insurance companies should explore the possibility of extending agency to these societies and make these societies a business associate in capturing the insurance business.

f) The Dairy societies should create awareness among the dairy farmers about the benefits of the insuring the dairy animals. During the training programs organized for the society members they may also invite faculty from the insurance companies to educate and explain the insurance policy benefits to the dairy farmers.

g) It is suggested that the society authorities should ensure that one of the staff members of the society be trained in by the insurance company for putting up the insurance claim in case of the death of the dairy animal and to chase the claims until its settlement. This will be a great service to the uneducated members of the society.

h) It is necessary for further improving the economic conditions of the dairy farmers, increasing the milk production is the solution. For this purpose, the dairy farmers, be educated to increase the milk animals for which bank finance is available and that

the activity is profitable. The dairy societies should in their regular meetings with the members should motivate the farmers to purchase additional milch animals.

i) The state Government launches various schemes for the development of the dairy industry on sound lines and provides subsidy element in the schemes. Therefore, the dairy society should keep with it upto date information about such schemes and make its members aware of such schemes so that they can take benefit of the same. This will also be in the interest of the dairy society. E.g. the state Government was bearing part of the insurance premium in one of the year under study but this was not known to the members of the society.

j) The dairy society should educate the dairy farmers about the various types of the semen available in the market and also as to why good quality semen should be used even though it might be slightly costing higher. Only after the awareness they will be using good quality semen and the quality of the dairy animal and the milk production will have a positive impact.

Stake Holder – District Level Milk Producers Union

Now because of heavy inroad of computer technology the technology has reached the interior part of Maharashtra. Number of new software are in the market which facilitate data compilation and without much difficulties and avoiding additional work, the data generated through Management Information System can be used for taking meaningful decisions. The management of the village level milk producer's dairy societies may be imparted training as to how to interpret the data for the

benefit of the dairy management and can initiate remedial actions.

Workshops for the village level society's staff should also be imparted training and their notions may be refined which will reflect on their productivity.

a) From the finding it is revealed that by and large the dairy societies are not co-operating the financing banks for recovery of their dairy loans to the dairy farmers from their sale proceeds of the milk supplied to them. In fact, the societies should cooperate with the financing banks in this regard to fulfil their mutual interest. If the society cooperates with the banks in recovery, naturally the banks will also come forward to extend speedy dairy loans. Therefore, the Pune District Central Cooperative Bank Ltd. should direct the dairy societies to assist the bank in their recovery efforts.

b) In view of the feedback so far as delayed cattle insurance claim settlement the researcher suggests that there is a need to have a dialogue between the insurance companies and the dairy societies and the problem if any should be sorted out and a system wherein the insurance claims need to be evolved. Here the researcher would like to state that at the initiative of Katraj Milk Dairy – the district level union, a meeting of dairy societies, insurance companies and the Katraj Dudh Dairy was convened and the issue was discussed thread bear. Now a solution has been arrived at and it is hoped that the system will get streamlined and the undue delay in the settlement of the cattle insurance claim will be promptly settled.

c) In order to sort out the issue of delayed dairy loan sanctioning by the branches of the bank, it is

suggested that Katraj Dairy may in its meeting with the dairy milk societies discuss the issue with them and get appraised of the grass root position and may take up the issue with the lead bank of the district i.e. the Bank of Maharashtra and request them to take up the issue in their quarterly District Level Consultative Committee wherein the bankers as well as the Government authorities are present. The Lead Bank may invite the Katraj Dairy Representative for such a meeting and a solution can be worked out. Apparently, the delay appears to be because of the non-cooperation of the dairy societies in the recovery of dairy loans given by them. This is the feedback given by the dairy farmers. The issue can be sorted out by mutual discussion and streamlining the system.

d) It was revealed that there is a contradiction in the responses of the dairy farmers and the dairy societies relating to giving information about the Government schemes relating to the dairy activity to its members. It is therefore suggested that dairy societies should invite the Agriculture Extension Officer at the block level, at least once in a half year in their meeting who should brief the Government schemes relating to the dairy activity to the members of the society so that they can take the benefit of those schemes. For the Extension Officer it is a part of his duty.

e) Now there is a well-knit network of the dairy societies in each Taluka. The number of dairy animals is quite sizable and it is showing a growing tendency. In order to ensure that the dairy farmers in the Taluka get the cattle feed of good quality and at reasonable rates, it is suggested that the societies operating in the Taluka can come together and start

a small cattle feed manufacturing plant which will apart from the quality cattle feed at reasonable costs, it will also ensure generation of rural employment. The society may sell it to the non-members also and earn a good profit. It is suggested that the District Dairy Unions should take a lead and motivate healthy and progressive dairy to go in for this activity which will have demonstrative effect for the other talukas.

Stake Holder: The State & Central Government

a) It is suggested that in view of the further scope for the dairy as well as installations of biogas plants in the rural area, the Government should take vigorous follow up of the biogas plant scheme for power generation and may make the subsidy available without any details which will attract the dairy farmers to participate in the program. The power generation through biogas plant is a source of generation of power through non-conventional sources of energy and only from the waste which can be further processed for economic gains too.

b) As stated about it has been observed that the dairy farmers find it difficult to get loan for purchase of the dairy animal from the local bank branches. Therefore, it is suggested that the state Government should direct the Block Development Officers and the Collectors who are chairing the Block Level & District Level Consultative Committee Meetings respectively to take up this issue in their quarterly meetings and sort out the dairy farmers problem of getting prompt loan for dairy purpose.

c) The National Bank for Agriculture and Rural Development (NABARD), Reserve Bank of India and

the Govt. of Maharashtra should take urgent steps to see that raising the bank loan for dairy purposes is made easy and that too at concessional rate. Being a priority sub-sector (activity allied to agriculture), the rate of interest is relatively low but an attempt be made to further reducing the rate of interest at least for those who are from the weaker section of the society.

d) During the course of this research it has been observed that both Central as well as the State Governments have introduced several dairy development schemes but at the grass root level it has been observed that there is no much awareness about these schemes. Therefore, the need of the hour is to see that the Central and State Govt.'s should with the involvement of all the stakeholders in the dairy activity, massively campaign using digital media and participating in the village level annual fairs increase the awareness amongst the dairy farmers so that they will be benefited in which also lies the mutual benefit to the dairy industry as a whole.

e) The Government should direct the Maharashtra State Electricity Distribution Co. Ltd. to ensure uninterrupted power supply even in the rural areas.

f) At present there is no system of maintaining record of the death of the livestock in any of the office. In the absence of the data as to the number of deaths, most common causes of death, and allied matters; it is difficult for the Animal Husbandry Dept. as well as the insurance company which provide cattle insurance cover to plan their operations on sound lines. It is therefore, suggested that on the lines of the death of human beings there should be proper record be maintained at the Villagle

Grampanchayat and the data so collected may be made available to the above departments.

g) Keeping in mind the employment potential of the dairy activity and its scope, which encompasses maintaining the dairy animals, insurance, cattle feed manufacturing and marketing, marketing of innovative dairy products, this dairy activity may be focused under the Government of India's Skill Development Scheme.

h) So far as human being considered the Government is very much conscious of balanced development of the sex. As there is an imbalance in this regard the Government has initiated Beti Bachav Campaign. Once the Government is convinced about the need for the balance growth of the human being similar need is also have to be visualized and the male cattle need to be protected. At present the scientists are working on projects which will ensure only the female calf using sexing semen. This may in turn lead to disaster.

i) The Government may utilize the dairy activity for doubling the farmer's income by 2022.

j) The Government of India may also explore the possibility of promoting products innovation using Panchgaya (the cow dung and urine, milk, cruds and ghee) and seek patents for the Ayurvedic Products to capture World market under Make in India mission.

17. LATEST DEVELOPMENTS IN DAIRY SECTOR

a) Grant of subsidy to the Dairy Farmers

For quite a long time there was a demand from the dairy farmers that the cattle feed prices are soaring high

year after year and that it is very difficult to meet both the ends of income and expenditure, and therefore, the Govt. of Maharashtra should grant subsidy to the farmers based on their milk production. In fact, if every input is to be outsourced the dairy activity results in net loss. There were several agitations by the dairy farmers. It is on this backdrop the Government of Maharashtra has taken a landmark decision and has announced grant of subsidy of Rs.5 per litter for cow milk only to be given from the 1st August 2018 and the same is to be routed through the District Dairy Unions by crediting the sale of milk proceeds through the dairy farmer's bank account. This system has been decided to ensure full transparency in the payment system. The district diary unions have been directed to make the payment of sale proceeds using online payment system. The district dairy union have been deducting from the sale proceeds the dues from the dairy farmers on accounts of cattle feed supplied, medicines supplied and advance if any given and the residual amount is being transferred to the respective dairy farmer's bank account. The Govt. of Maharashtra is monitoring the payments thrice in a month. The subsidy amount has been reduced to Rs.3 per litter for the period Feb.2019 to 30th April 2019.

b) Promotion of Cash less transactions

The subsidy of Rs.5/- per litter is available only through the savings bank account of the dairy farmer and that the same is being monitored by the Govt. Through this system the Government wants to ensure cashless transactions. The dairy farmers have been asked to open savings bank accounts and the information of the same is to be given through the respective dairy society to the District Dairy Union. The difficulties if any encountered in the operation of the scheme are being sorted out by the Government. Those who do not open the bank account and

failed to observe the set discipline such dairy farmers will be deprived of the Government subsidy.

It has been observed that the dairy farmers have expressed their satisfaction on acceding their demand for subsidy. Most of the district dairy unions have adapted the implementation of the scheme and the dairy farmers have been benefited.

18. VALIDATION OF HYPOTHESES

The hypotheses initially formulated have been put through a statistical analysis using Chi-square test and all of these hypotheses have been tested satisfactorily. The detailed working of the tests applied has been given in the chapter No. 5.

19. SCOPE FOR FURTHER RESEARCH

While conducting this research, the researcher had kept one eye on the emerging areas where the further research can be conducted. There are number of developmental scheme in the diary sector launched by both Central and State Governments.

1. Therefore, it is suggested that one area that comes up to researcher's mind is the Critical Appraisal of the various Central and State Government's dairy development schemes in the State of Maharashtra". This study will be very much useful for the dairy sector which is having tremendous potential for the development in times to come.
2. Even research can also be conducted by undertaking comparative working of the District Milk Unions so that best practices introduced will come to surface

which can be immolated by the other District Milk Unions.

3. Taking into account the need for costing exercise for the dairy farmers in different regions and for different varieties of animals a research will be helpful to educate the farmers in minute details.
4. Considering the availability of the milk production, the per capita consumption of the various states give an impression that there is very good potential for taking a research to identify areas through which the per capita consumption of milk and its products can be increased. E.g. Mid-day meal scheme for the students can be one such avenue.

20. CONCLUSION

There is large scope for dairy and food industry to grow further in view of the globalization and increasing purchasing power of consumers. The "National Dairy Plan (NDP) "a World Bank funded project, envisages increasing productivity of milch animals through provision of good quality semen, door step AI services and scientific feeding practices.

Dairy farming is a business; a very demanding business. A successful dairy farmer has to handle sensitive biological processes in lactating animals and growing plants. He has to handle delicate health and hygiene matters together tithe advanced machinery and software. And he has to make financial decisions and supervise employed personnel. Farming is a business that runs 24 hours a day, year-round and it does not take a break for holidays. It is a rewarding business when you see animals and plants develop and grow and feel that you can be part of a system that provides good nutrition to your fellow men,

while making a reasonable financial return for all your efforts.

Dairy farming is not a way of living, but a profession, providing a good life for a skilled business manager.

India today is in an advantageous position of having the necessary skills, manpower and infrastructure to process milk across the country and has a fast-growing private sector with own funds.

There is a seasonal variation in the quantum of milk produced with a near constant but growing milk consumption is enabling the industry to produce the Skimmed Milk Powder required domestically in the flush season and use it in the subsequent lean season.

Here it will be appropriate to record what Shri Dilip Rath – Chairman NDDB, observed while addressing the delegates at the IDF World Dairy Summit in Rotterdam, the Netherlands held during 17-21 October 2016. Shri Rath said that three factors contributed to this phenomenal growth of dairying in India. First, is the creation of a robust and sustainable farmer owned and controlled institutions, which gave market access to small holders and made the small holder system a viable business mode. Secondly, adoption of policy for breed improvement of various indigenous breeds retaining valuable climate resilient traits of heat tolerance and disease resilience while resulting in higher yields. Third, efficient use of food by – products and Agro industrial residue based balanced feeding system without significant use of resources required for production of human food.

If the dairy industry is to survive in the ever-increasing global competition and excel in its quality and safety approach it has to seriously think of reorienting the paradigm shift.