NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

"An eye opener for the newcomers in dairy business and a road map to start business"

A Thesis

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Abstract

Dairy farming in Pakistan is considered to be a very profitable business. For the same reason there are lots of people who are trying their luck in this sector. Unfortunately since this sector is not organized people are not aware about the challenges involved with dairy farming and don't have a road map to start the business. This report is about the dairy farming in Pakistan, the scope of dairy farming in Pakistan in current scenario. This report has specifically discussed the challenges faced by commercial dairy farms in Pakistan and in the world and solutions they come up with to solve those challenges. Lastly, this report provides a complete road map for new comers who want to star this business from purchase of animals to selling of milk.

1) Introduction of Dairy Farming in Pakistan

Every developing country depends on its agricultural and livestock sector for economic development. It is a source of a number of resources to the country. It provides food and is one of the main sources of meat and dairy; it provides income to local milk providers as well as large milk industries, it is a means of employment for thousands of citizen and it is possibly a source of foreign exchange in the form of export (Khurram). The consumption of livestock products is increasing proportionally with the increase in population. Dairy milk is consumed in its original form as well as processed into a number of products such as cheese, butter cream and ice cream. For local or small scale livestock keepers, milk provides relatively quick returns on its worth. And in Pakistan, these small-scale milk holders produce majority of milk.

The dairy industry in Pakistan contributes majorly in its economic growth and is a vast contributor in our country's GDP. The per capita consumption of milk in Pakistan is 158.3 kg per annum that is 2.3 percent more than the per capita consumption of 126.1 kg before. This rate of consumption is way more than other countries' such as China, as the average global consumption of milk per capita is 82.1 kg per annum, making Pakistan's consumption to be double than the average global consumption. In global market of milk production, Pakistan is the fourth largest milk producing country (Fakhar, 2006).
The production of milk in Pakistan is in two forms. First is the local production of unprocessed milk by the rural families, which produce one third of the milk consumed by the urban sector; and second, is the industrial production of processed and packed milk. Both of these sectors together make the dairy Industry of Pakistan.

The dairy value chain starts from the producer to middlemen, contractors, distributors (Gawalas), to processors and industries. And the milk distributed in the local market is either processed unpacked milk, loose milk or processed and packed milk; each of these products has their own price range. The number of dairy farms in Pakistan is vastly scarce. Therefore the milk industries in Pakistan receive most of their milk produced by local rural families and cattle holders. Around one third of the milk produced by the rural families is utilized by the industries or consumed by urban consumers.

Loose or non-processed milk has very little shelf life. The milk processing and packaging industries are based on Ultra-Heat Treatment Plant (UHT) that heat the product up to 135 degrees. It destroys all microorganisms resulting in an increased shelf life (Tetra Pak).

Although it is major contributor in the country's economy, Pakistan's dairy industry still has major problems including lack of cattle and proper dairy farms, low quality animal feed, illiteracy among rural milk producing families which effect quality, and lack of technical man power for dairy industry. Given that milk consumption as well as its effect on the local economy is increasing day by day, we need to identify all the factors that have an effect on the dairy industry of Pakistan. This paper provides a PEST analysis of the dairy industry as well as a Porter Analysis (Shahid, 2012).

2) Industry Analysis

The first step in order to start any business is to have an industry analysis to examine what kind of challenges the particular business face in that industry and what kind of opportunities the business has in the industry.

a) PEST ANALYSIS

Political

In Pakistan, the crop sector is given more priority than the dairy sector in the agricultural economy. Government allots a reasonable part of the budget for the improvements and prosperity of the crop sector whereas the dairy sector is usually ignored. Where the planners have devised a number of policies for the crop-yielding sector of our agriculture, the dairying sector has been constantly ignored. This is one of the main reasons of the less than satisfactory improvement in this industry and the deterioration of the livestock population. Until 1990, there was no policy to regulate the use and slaughter of animals and their well being. Various improvements have been made since the governments of 1960s to 1980s including the First Five Year Plan (1955-60) that emphasized on the breeding of cattle for better milk and meat production, their health and provision of healthy feed. In the late 60s and 70s, the trend of commercial dairy products started with the establishment of milk pasteurization and sterilization plants. (Ahmad).

Economical

As mentioned above, Pakistan is one of the highest milk producing country in the world. The dairy industry has a major role in the economy of our country. But there are a number of factors which affect the economic development through this industry. One of those factors being the illiteracy of local milk suppliers. Due to lack of a reasonable number of technical dairy farms, most of the milk suppliers for both local and commercial consumption are rural families and local suppliers and distributors (Gawalas). Due to lack of proper education, they do not put much effort in improving the quality and preservation of raw material resulting in a large fraction of raw material being wasted. The UHT plants solve this issue by properly processing and sterilizing the raw

material and increasing its economic value. As the UHT milk does not have any taxes, it provides more economy to the country.

Social

Society is the most important factor affecting any industry. And the statistics show that consumption of dairy product in Pakistan is twice as more as the average global consumption. The UHT plants have been favored by the upper middle and upper class because of its safety and better health options in the last ten to fifteen years. But recently there is again more trends towards the consumption of unprocessed natural milk because of the recent researches in UHT processed milk that showed that it is more chemicals and additives than actual milk. The main reason for the society's adapting to UHT processed milk was its safer and healthier products, and now that these products have been proven to be more harmful than healthy, its market is again deteriorating. The policy makers and government needs to develop a stricter regulation plan for the production of safe and healthy dairy products (Jalil, 2009).

Technological

For the local suppliers and distributors of milk, technology plays an important role because they do not have sufficient transportation or preservation supplies to keep the milk fresh and supply it to the consumers or the UHT plants. To increase the efficiency of local dairy industry, appropriate technologies are needed to be made available to the local suppliers. In the UHT milk industry, technology primarily depends upon capital investment. As the custom duties on the packaging machinery are relatively high, this also contributes to the high prices of processed milk products and also makes it impossible for small farmers to attain.

b) Porter Five Forces

Bargaining Power of Suppliers

Bargaining power of suppliers is very low because dairy farms just have one customer segment to sell the milk and this customer segment is MCC (Milk collection companies). Milk collection companies offer a fixed rate regardless of the quality of

milk. They test the milk and if milk falls under their standard definition of per liter, they will pay you accordingly. The more the volume of milk, higher is the rate. Lesser the volume of milk, lesser is the rate. Dairy farms don't have the resources and capacity to add value to milk by processing it and packaging it so they are left with the only option to sell milk to MCC. Selling milk to MCC has an advantage too as there is always a buyer to buy a milk regardless of the volume produced by you.

Bargaining power of Buyers

Bargaining power of buyers is very high as there are very few Milk collection companies and thousands of farms in contrast. So all MCC offer a very standard rate and dairy farms have to sell milk at that rate. The other reason for this high bargaining power is that MCC companies have capacity to increase the shelf life of milk and on the other hand dairy farms just have a small window of few hours to sell the milk before milk gets wasted.

Threats of New Entrants

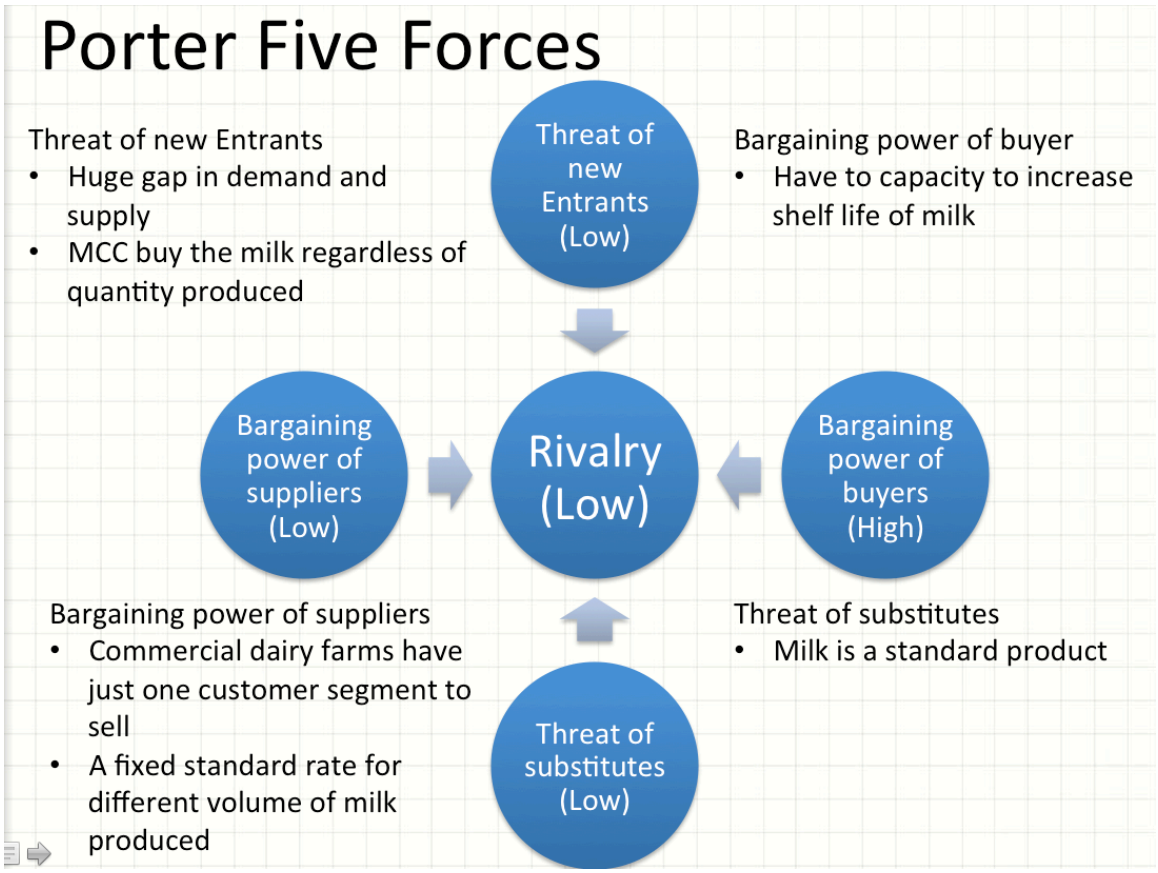
Threat of new entrants is relatively low as there is a huge gap in demand and supply for the milk. MCC companies encourage dairy farms to sell milk to them. They encourage new people to enter into this business due to this large gap in demand. And MCC companies are willing to buy as low as 1-liter milk from any individual to as high as 120,000 liters of milk from large dairy farms like Nishat dairies.

Threats of Substitute

Dairy farms produce milk in the raw farm that is very standard. So threat of substitutes is very low as all dairy farms are producing same standard milk. MCC process the milk and then sell this milk to consumers. So it doesn't matter from which farm or breed the milk is coming from, MCC will buy the milk.

Industry Rivalry

Rivalry among dairy farms is nearly non-existent as all dairy farms have one customer to sell the milk in the form of MCC. On the other hand MCC are willing to buy the milk regardless of the how big or small the dairy farm is, how well managed or poorly managed the dairy farm is, which breed the dairy farm is having.



c) SWOT Analysis

Strengths

1) Abundance of labor

2) No effort to sell milk

3) Ranked 4th among milk producing countries

Weaknesses

1) Poor milk yield/animal

2) Poor veterinary facilities

3) Shortage of breeds

4) Just one customer segment (Milk collection companies)

Opportunities

1) Per capita milk consumption of 159kg

2) Share in global dairy is almost negligible

3) Demand 30% higher than supply

Threats

1) Dairy sector in unorganized

2) Outdated farm practices

3) Lack of awareness towards common goal

4) Warm climate that lowers the milk yield of animals

SWOT Analysis

	Strengths 1)Abundance of labor 2)No effort to sell milk 3)Ranked 4th among milk producing countries	Weaknesses 1)Poor milk yield/animal 2)Poor veterinary facilities 3)Shortage of breeds 4) Just one customer segment
Opportunities 1)Per capita milk consumption of 159kg 2)Share in global dairy is almost negligible 3)Demand 30% higher than supply	Strengths-Opportunities 1) Try to reach the global dairy sector 2) More focus on farm management	Weaknesses-opportunities 1)Adopting modern techniques 2) Creating a new customer segment 2)Focus towards exotic breed 3)Focus on hygiene
Threats 1)Dairy sector in unorganized 2)Outdated farm practices 3)Lack of awareness towards common goal 4) Warm climate	Strengths-Threats 1)Educate labor towards modern practices 2)To improve local breed	Weaknesses-Threats 1)Striving for common goal a) Organized sector b) Collective effort to create customer segment 2)Controlled dairy sheds

d) Competitor analysis

Dairy farming in Pakistan is very unique and the unique selling proposition of this business is that this business enjoys almost no competition. Regardless of the volume of milk produced by any dairy farm. There is always a buyer who is willing to buy all the milk in the form of MCC. Milk collection companies like Nestle, Engro and Gourmet have a big share in total milk consumption in Pakistan. These companies don't have the capacity to produce all the milk. For examples, Engro has a dairy farm that is producing just 4% of their total milk requirement. So most the MCC buy milk from rural dairy

farms and have established their collection units in different districts. Each company offers incentives to dairy farmers so that they can retain the dairy farmers. Nestle for example increase the rate if you deliver milk everyday to them and they also increase the per liter rate if the volume of milk being sold to them in increased too.

Small and even commercial dairy farms don't face any competition as regardless of the quantity of milk produced by them, regardless of the breed of cows dairy farms have, regardless of the fat content in the milk. MCC will buy the milk and later process it and sell it to consumers.

This makes dairy farming even more attractive business in Pakistan as dairy farmers can put all the efforts in farm management and increasing the milk production of their farm without any fear of competition or putting an effort to sell milk.

3) Challenges faced by dairy farms Nationally and Internationally

In every business new challenges emerge regardless of how good the planning is after the implementation. There are two ways to learn the things. First is by experimenting yourself and this might cost you a lot. And second is to learn from the mistakes of others. There are many dairy farms operating nationally and internationally and these dairy farms faced several key challenges as well. This chapter will highlight those challenges to learn from their mistakes.

"The vast majority (about 70%) of dairy farmers in Pakistan are smallholding farmers. Up to 43% of dairying households in Pakistan maintain herd sizes of one to two animals while another 28% of the households maintain herds ranging from three to four animals3. Some 90% of milk production comes from smallholding farmers. Many believe that only large mechanized farms are the solution to increased profitability and quality. While this is true for many US, EU and other developed countries having achieved a level of farm mechanization, the challenge is to achieve the goals of profitability and quality while recognizing the situation in Pakistan."(Fakhar, 2006)

1) Problems faced by Dairy Farmers Nationally and Internationally

Challenges faced by dairy farmers are very different in different parts of the world. Below are few examples of commercial dairy farms in Pakistan and around world and problems they faced and solutions they came up with.

Example	Problem	Solution
Almarai Dairy Farms - Saudi Arabia (Dealing with hot summer temperature)	This farm is located in the desert on a place where temperature can reach up to 50 C in hot sunny summers. The ideal temperature to for dairy animals to perform well is just 27 C.	Almarai came up with the idea of using water sprinkling and large sized fans to bring the temperature down and maintain a humidity level that is required for dairy cows to perform well. They

		are able to achieve an average milk yield of 35 liters per day that is highest in the region giving them a competitive advantage.
JK Dairies (Pioneer in the commercial dairy farming)	JK dairies were the first commercial dairy farm that was established in Pakistan back in 2007. The biggest problem they faced at that time was to import the dairy equipment and dairy cows to Pakistan as it was never done before. They were hesitant to import pure bred Holstein cows as they have environment adaptability issues.	JK Dairies imported the Australian Friesian-Sahiwal, a breed that was created by the Australian state of Queensland in the 1960s. This breed did not have adaptability issues to Pakistan environment and their average milk yields were higher than the local animal at that time. This paved way for the modern dairy farming in Pakistan
Nishat Dairies and JK Dairies (Lack of knowledge base of dairy farming)	There was no prior knowledge available of modern dairy farming in Pakistan. JK dairies faced this problem because they were the pioneers in commercial dairy farming. Nishat dairies entered the market a little later but they went through same problem, as it was their first experience as well. They had no first hand experience	JK Dairies employs a lot of foreign staff, particularly from East Asia, since Tareen feels that local universities do not have enough graduates who are familiar with global best practices in agriculture and livestock. The farm manager of Nishat dairies is also an expert from Holland. So, instead of experimenting themselves

	about farm management.	on animals, they employ foreign staff to train their local staff and take care of day-to-day operations. Both these farms have reduced the mortality rate of their animals significantly by seeking help of foreign staff.
Nishat Dairies and Nobel Dairies	Nishat dairies were having state of the art infrastructure in Pakistan but they were still not able to get better milk yields per cows in Pakistan. Their average yield per cow per day was almost 10 liters less than the international standards given same fixed cost expenses.	They resolved this problem by importing cows from Holland back in 2015 and according to their farm manager, they are getting an average of close to 35 liters per day per cow and the cost has not increased significantly. This move has increased the revenue of Nishat dairies significantly and other dairy farms have imported the cows from Holland including Nobel dairies in Lahore.

2) Problems faced by small and medium size dairy farms

Problems faced by small dairy farms are totally different from the problems that are faced by dairy farms around the world and even dairy farms in Pakistan. The main reason for this is that in Pakistan most of Dairy farms have an average herd size of around 10 animals. They are operating within very limited resources. Small and medium size dairy

farms can learn from the problems that were faced by dairy farms around the world and in Pakistan by not repeating the mistakes they have done.

	Problem	Solution
Purchase of Animals	This is the most basic issue that dairy farmers face. There are no local markets available to purchase exotic breed and in order to import the animals, most of companies require a minimum order of 25 animals. Most of small and medium size dairy farms end up buying culled animals that are sold by commercial dairy farms due to poor performance. There are many small dairy farms that started their business this way and ended up loosing all their capital investment.	This problem can be solved if Government of Pakistan takes strict action against culled animals sold in Market by commercial dairy farms as this process is destroying the small dairy farm industry. Secondly, purchase of animals is the most critical issue. It is better to do some effort and find 2-3 people who are interested in starting dairy farming and import the animals together.
Milk sale	Selling milk is a very easy thing in Pakistan as there are several milk collecting companies that will buy any amount of milk you produce daily. But the rates offered by them	Unfortunately, this is an issue that can only be resolved if Government step in and give incentive to small dairy farmers. Commercial dairy farms produce in bulk and get

	depend on the volume you are producing. Lesser the volume, lesser the rate will be offered to you and vice versa. Commercial dairy farms like Nishat and JK Dairies get as high as Rs 65 per liter and small dairy farms get as low as Rs 50 per liter.	the higher rates and small dairy farms with a herd size of 10 animals cannot produce the volume of milk that is produced by 6000 cows at a dairy farm.
Average milk yield	The third problem small dairy farmers face is the average milk yield of their animals. International dairy farms are maintaining an average of 40 liters per day per cow and even in Pakistan the commercial dairy farms are maintaining an average of more than 25 liters per cow per day. But small size dairy farms are able to achieve maximum 15 liters per day. Because no matter how good and healthy the animal is, if the animal is not given the proper controlled environment. Productivity	Setting up a modern infrastructure requires huge capital. Small dairy farms don't have the resources to set up an infrastructure like Almarai or Nishat Dairies. Hence, they can never achieve the milk yield modern commercial dairy farms are achieving. All they can do is to replicate the infrastructure within limited resources by making sure that the dairy shed has proper dairy fans, sprinkling system and well ventilated shed. This will improve their

	cannot be increased.	milk yield to 4-5 liters per day per cow.

4) Lessons learned from the other commercial dairy farms

I started dairy farming 2 years back. The challenges faced by me were different from the challenges faced by commercial dairy farm in Pakistan and around the world but there were quite a few lessons that I took from the problems faced by them.

1) I realized from the beginning that only those commercial dairy farms are successful that have imported the animals. As purchase of animals is very crucial for dairy farming so instead of buying animals from local market. I imported the animals and this has benefited me as I am having better production per animal.

2) Secondly, after studying success of Almarai it was clear that animals can perform well if they are given the right environment. Temperatures in Pakistan can reach up to 45 C in hot summers and temperature is Saudi Arabia is even more than this. So I took help from their experience and installed water sprinklers in my dairy shed to lower the temperatures. I have observed that average milk yield of one animal increase by almost 3-4 liters per day by giving them a cooler environment in summers.

3) All commercial dairy farms are selling milk to MCC and not marketing milk themselves to individual consumers. As milk production and milk distribution are two both different businesses so right from first day I sold milk to Nestle as all commercial dairy farms in Pakistan are doing.

4) All successful dairy farms around the world and in Pakistan are feeding their animals with TMR (Total mixed ratio). This provides animal with a balanced diet and keeps them healthy. This also increases the milk production of each animal by 2-3 liters per day. So right from first day I opted for this method of feeding for my animals and getting good results till now.

5) Apart from this, the infrastructure plays a very important role in having the best milk yields. Only those dairy farms are successful in the world and in Pakistan that have a controlled dairy shed and have automated their operations. This is very critical for success to automate as much as possible within your resources to increase the productivity. For this reason use of milking machines along with the use of automatic showering for lowering the temperatures can be very helpful.

Key Partners

- Milk Collection companies (Nestle, Engro, Gourmet, etc.)
- Dairy supply companies (Maxim is the key supplier, altaf and co.)
- MCC buy the milk in bulk and dairy farmers no longer have to take care of distribution
- Maxim provides with all the key resources for animal care including animal feed and health related services

Key Activities

- Milking the animals
- A distribution channel to deliver milk to your partner (Nestle)
- Revenue collection from Nestle on weekly basis
- Farm management (Taking care of animals and labor)

Key Resources

- Healthy animals
- Skilled labor
- A controlled dairy shed

Value Proposition

- Providing our partner with the milk tested and approved by them. MCC buy milk regardless of how much milk is produced at a dairy farm so it must be ensured that milk provided to them are meeting their standards
- Try to increase the fat content of the milk by providing animals with a balanced healthy diet. Higher fat in the milk gives better rate per liter
- Improving the breed of your animal to increase the milk yield in years to come

Customer Relationships

- Loyalty incentive from MCC
- Make sure the milk produced doesn't have any traces of antibiotics in it as MCC will not buy such milk
- Getting the required resources from Maxim on credit

Channels

- Delivering the milk to Nestle milk collection centers
- Nestle colleting the milk from farm (In case milk yield is more than 100 liters a day)

Customer Segments

- Milk Collection Companies
- There are several MCC like Nestle, Engro, Gourmet
- These companies have a vast range of dairy products and these companies mostly produce a very small percentage of milk
- So in order to meet the demand gap, these MCC buy the milk from dairy farms all over Pakistan

Cost Structure

- Feeding of animals (This is the single largest cost)
- Medical expenses
- Labor cost
- Utility cost (This include electricity bills and gas bills)
- The most expensive key resource is animal feeding
- The most expensive key activity is having a controlled environment in shed

Revenue Streams

- Revenue by milk sale (Major revenue stream)
- MCC companies pay on weekly basis
- Revenue by culling animal annually
- Animals that are not productive or low yielding have to be sold in market each year and must be replaced by young fresh animals
- Revenue by selling young male calves
- Male calves doesn't add any value to dairy farm, so they must be sold after few weeks they are born

5) The Business Canvas Model

The above analysis suggests that dairy farming can be a very profitable business. Government wants new people to enter into this business. There is a huge supply and demand gap that makes the marketing of product easy. And most importantly, this business enjoys very less competition currently and considering demand and supply gap and absence of any alternative for the milk. The competition will stay low for this business in years to come. This business can be profitable only if this is done in the right way. The business canvas model below will outline a detailed model about this business from start to end.

1) Key Partners

The success of dairy business lies in having good partners in the start. It is important to have partnership with your suppliers and with those to whom you are supplying your product. There are several milk collection companies (MCC) that buy milk in bulk from small and medium sized dairy farms so it is very advisable to sell milk to MCC. These MCC include Nestle, Engro and Gourmet. Similarly, Maxim is one of the companies that provide dairy farmers with all the farm related resources.

Maxim provides you help in all farm management issues. Maxim even imports the animals so one can buy the animals from them as well. They are also into feed manufacturing business so it is highly advisable to buy animal feed from them instead of producing it.

One of the most successful dairy farms in Pakistan is a Nishat dairy. They have a capacity to produce 120,000 liters of milk per day. They supply their Milk to Nestle. They are not selling the milk to individual household consumers. They are currently largest milk producer in the country but the core business of Nishat dairies is Milk production and they are not into milk distribution business yet.

1) Key Activities

Healthy animals are most critical for successful dairy farming. And the most important activity in dairy farming is purchase of animals because the whole performance

of a dairy farm revolves around the animals and their health. Purchase of animals should not be made in a hurry and one should spend enough time in finding reliable companies who can import the animals for you.

Second most critical activity is the milking of animals. A better milk yield is the backbone for successful dairy farming. Milking must be done 2 times a day and there must be a schedule because one is able to get better milk yield if there is a schedule in place. Most small dairy farms don't have any mechanism to increase the shelf life of milk so as soon as milking is done. The milk should be dispatched to MCC on time before the milk is spoiled.

If you are partnering with MCC, you will be paid on weekly basis. And again it is advisable to sell milk to MCC instead of individual household consumers because dairy farmers will get timely payment.

The last important activity is farm management. Dairy farmers must make sure that the dairy farm is clean and properly sanitized. Animals are fed on time, animals have enough fresh water to drink all the time. All the electric equipment's are in place and working properly because controlled environment is very necessary for successful dairy farming. Lastly it is important to retain skilled labor so make sure your labor is happy with you by paying their wages on time and treating them with respect (Sarwar, 2002).

2) Key resources

The major resource in dairy farming is healthy animals. If animals are healthy, dairy farmers will have a better milk yield and hence good profits. Healthy animals will produce good breed and will play an important role in success of dairy farming in a long run.

According to an article published by the Express Tribune, JK dairies in Pakistan have one of the finest animals in the country. And they too imported their animals from Australia back in 2007.

> *"Economies of scale were the key to JK Dairies' strategy, and not just in the number of animals. The company imported some of the finest milk breeds from Australia in order to improve output per animal. And it was smart in terms of the kind of cows it imported too." (Shah, 2012)*

Second important resource is skilled labor as it is really hard to find skilled labor and one should pay close attention in training the labor and then retaining it. Lastly the controlled shed is the key for having healthy animals so it is very important to have regular maintenance for the shed area.

3) Value proposition

MCC doesn't pay on per liter basis rather they pay according to the fat content in the milk. Feeding the animals with a healthier diet so it is very important to get the feed from good feed manufacturing companies and feeding the animals on time improve the fat content in milk. If the milk produced by you is high on fat content, you will get a better rate for the milk.

Second important thing is to improve the breed for years to come. Inseminating your cows with good quality semen can do it. It will be expensive but it will surely benefit the dairy farmers in years to come. A bad quality semen might cost less but the cow as a result of this will be low yielder and hence not beneficial for dairy farm.

4) Customer relationship

In case of dairy business the customer relationships are B2B relationships as dairy farmers are dealing with businesses. Milk collection companies offer lots of incentive if dairy farms are selling milk directly to them in bulk. One of the incentives is loyalty incentive in which you get an increase Rs. 3 per liter per liter if you are continuously supplying milk to these companies. Apart from it, dairy farms get the volume incentive if the total volume of milk is increased. The more the milk is sold to these companies, higher the rate you will get. Similarly, Nestle arranges workshops and train dairy farmers with modern dairy farming techniques (Iqbal, 2007).

MCC buy milk from dairy farms and dairy farms must make sure that the milk they are selling to MCC must fall within the standards they have asked for. MCC doesn't buy milk from dairy farms if the milk produced by them has traces of antibiotics in it. Whenever an animal gets sick and treated with antibiotic. The milk produced by that animal is not safe for human consumption until the effect of medicine is withdrawn. Dairy farms must make sure that they don't sell the milk to MCC if their animals are being treated with antibiotics. By doing so dairy farms will be available to retain the

customer that is willing to buy any amount of milk produced by you and it will also help in building long term customer relationship.

Businesses in Pakistan are mostly done on credit. So it is very important to have good relationships with your suppliers as well. Pay them on promised dates so that you don't have to face the embarrassment in future. MCC will pay you weekly so it is advisable to clear your dues on weekly basis with your suppliers like Maxim as well.

5) Channels

There are two ways in which milk can be delivered to collection centers. The first one is to deliver the milk your self. Milking takes place two times a day, in the morning and in the evening. So as soon as milking is done, farmers should deliver the milk safely to the milk collection centers and get the receipt of the milk delivered to them.

If the quantity of milk produced by you is more than 100 liters a day. MCC can collect the milk from your farm. Their milk collection van collects the milk from you once a day. And in order to preserve the milk MCC provides you with chiller. This is one more advantage of working with MCC and having good relationships with them.

6) Customer segments

The main customer segment of dairy farms is Milk collection companies. MCC will test the milk each time the milk is delivered to them. The major chunk of the milk produced is collected by MCC and this is the only way the business can be successful in the long run (Khan, 2013).

The milk collected by companies straight away goes to milk processing plants where milk is packages and then reach consumers through milk shop. But not all people buy packaged milk in Pakistan. Milk produced by rural or small dairy farms is collected by individual van contractors and reach large scale "dhodhis". This milk is then supplied to local sweet shops and milk shops. And from milk shops this milk is delivered to consumers.

7) Cost structure

There are several costs involved in operating a dairy farm. The first and foremost cost is the cost of feed. One cow requires almost 4-5 kg of concentrate per day along with 20-

25 kg of silage that falls under fresh fodder. The cost per kg of concentrate is Rs33/kg and the cost of silage range from Rs6-10/kg depending upon the quantity you are buying. Along with this there are some miscellaneous costs in the form of minerals that are given to each animal and it is no more than Rs 20 per animal per day.

The second major cost is regarding the medical expenses of cows. It's a bit hard to calculate the medical expenses as living things are involved but on average the medical cost lies between Rs 500-800 per animal per month.

The third cost is regarding the labor cost. A skilled labor might charge Rs 12,000 per month for 24 hours and in order to take care of one shed 2 people are advisable.

The last cost is regarding the operational cost of dairy shed. Cows can perform better if they are provided with a controlled environment and it is only possible by having proper ventilation system in the farm of dairy fans and sprinklers. Dairy farmers must make sure that the farm is operational all the time and there is a continuous supply of electricity throughout day. The utility cost to run all these equipment is around 10,000 per month. It's the minimum cost, the cost will vary of the number of animals are more.

8) Revenue streams

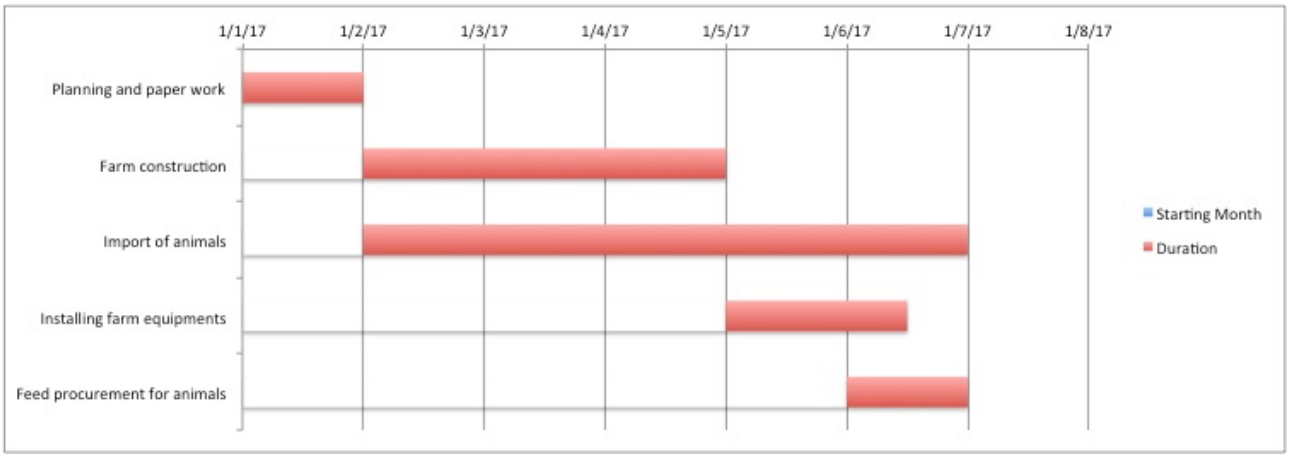
Selling of milk collects the major chunk of revenue by dairy farmers. MCC offers a very competitive rate of Rs 55 per liter and as the quantity of milk produced is increased the rate offered by Nestle also increase to around Rs 63 per liter.

The second source of revenue is by culling the animals. A dairy farm can be sustainable only if each year low performing animals are sold in the market and new well performing animals are bought. The culled animals can be sold at a rate of approximately 1 lac per animal.

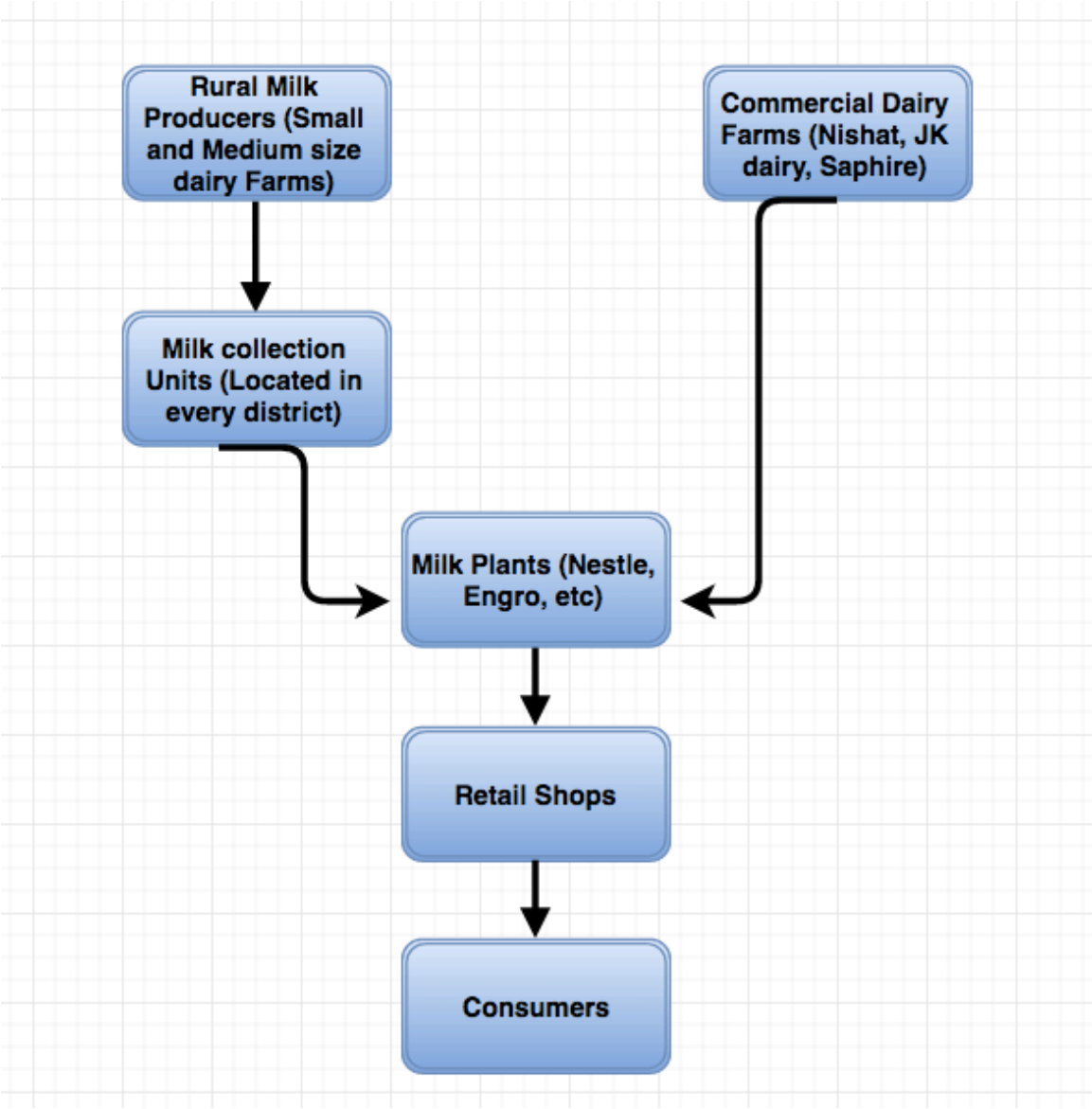
Last revenue stream is through selling young male calves. Male calves are of no use for dairy farmers so young male calves are sold few months after they are born at a rate of approx. Rs 10,000 per calf.

6) Gantt Chart

It may take up to 6 months to establish a dairy farm and have it operational. There are 5 major tasks that need to be done in this regard. Frist one is planning and paper work that might take 1 month to gather all the required information. This must include the research required to construct the farm, import of animals, the equipment required to set up dairy farm and feed procurement. Once the paper work is done. Each task must be informed timely to have the farm operational in least possible time. Some tasks can be done simultaneously and some are performed once construction is complete.



7) Flowchart of complete dairy business



8) Financial Projections

This part of report will provide a complete roadmap for newcomers to follow for the first year. I believe that first year is the most critical time period in this business as it lays the foundations for the coming years and your success or failure is based on this first year.

A feasibility report will be presented based on 10 animals to start this business. Total project cost of this is Rs 3 million.

a) Building and infrastructure

The ideal shed space requirement for 1 cow is 40 square feet and in order to have a housing space for 10 cows, you need to have a housing space of 400 square feet ideally. The shed of this size can be constructed at a rate of Rs 500 per square feet.

Description	**Total Area Required**	**Cost to construct**	**Total cost**
Shed space for cows	400	Rs 500	Rs 200,000
Open paddock for cows	800	-	-
Store for fodder, concentrate and machinery	150	Rs 500	Rs 75,000
Servant room	150	Rs 500	Rs 75,000
Office	150	Rs 500	Rs 75,000
Total Cost			Rs 425,000

b) Machinery and Farm Equipment

Following machinery and farm equipment is required and it can be purchased at the following rate

Description	**Rate per item**	**Total cost**
Milking Machine	Rs 120,000	Rs 120,000

Freezer	Rs 40,000	Rs 40,000
Furniture	-	Rs 20,000
Miscellaneous	-	Rs 20,000
Total Cost		Rs 200,000

c) Animal price

There are three main breeds in the exotic breed. First one is Holstein Friesian, second is Jersey and third one is Jersey Friesian cross. My advice is to have a mix of all three breeds, as they will improve the overall quality of the milk at far. Jersey has a better fat content in milk. Holstein has better milk yield but lesser fat content. Nestle gives you rate depending upon the fat content of the milk so its better to have a mix of both breeds.

Breed	**Total number of items**	**Cost per animal**	**Total cost**
Holstein Friesian	3	Rs 240,000	Rs 720,000
Jersey	3	Rs 240,000	Rs 720,000
Jersey X Friesian	4	Rs 240,000	Rs 960,000
Total	10		Rs 2,400,000

d) Total capital cost requirement

The total capital cost requirement to start this business is approx. Rs 2.6 million. The rest of the costs are operating costs that will be explained in tables below.

e) Fixed monthly costs

Description	**Monthly**	**Yearly**
Farm Rent	Rs 15,000	Rs 180,000
Farm workers	Rs 24,000 (Two farm workers)	Rs 288,000
Utility bills	Rs 5000	Rs 60,000

Total fixed costs		Rs 528,000

f) Feed Requirements per animal

Description	**Kg/animal/day**	**Cost/kg**	**Total Cost**
Silage	20	Rs 10	Rs 200
Concentrate (1 kg for every 3 liters of milk)	5	Rs 35	Rs 175
Minerals	-	-	Rs 20
Total feeding cost per animal per day			Rs 395

g) Feeding cost for feedings 10 animals in a year

Description	**Quantity**	**Cost to feed one animal in 1 day**	**Cost to feed 10 animals in 1 day**	**Cost of feeding in 1 year**
Animals	10	Rs 395	Rs 3950	Rs 1,441,750

h) Milk Production

Total number of animals	**Average milk yield per animal**	**Milk produced per animal in a year (300 days)**	**Total milk produced**
10	15 liters	5475 liters	54,750 liters

i) Milk sale

Total milk production in a year	**Sale price of milk**	**Total sale**
54,750 liters	Rs 55	Rs. 3,011,250

j) Total Cost in one year

Fixed monthly costs	Rs 528,000
Feeding cost	Rs 1,441,750
Total cost	**Rs 1.969,750**

k) Net income before tax

Total Sales	Rs. 3,011,250
Total Cost	Rs 1.969,750
Profit before tax	Rs 1,041,500

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