

A Qualitative Study to Understand the Factors Influencing Competitiveness in the Dairy Sector

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Umair Waqas*, Sonia Umair**, Ibrahim Rashid Al Shamsi***, Hyder Kamran****, Ilya Bystrov*****

Abstract

Despite being one of the highest milk producer countries, Pakistan is still unable to manage an organized supply channel in the dairy sector. The analysis of competitiveness is of profound importance for any sector as it provides a base to understand certain underlying factors that can influence individual farms and industries in that sector. The main objective of the present study was to explore certain factors that limit the competitiveness in the dairy sector of Pakistan and to develop certain management and policy recommendations to boost this sector. A qualitative approach was used to uncover some of the factors that can influence the competitiveness of dairy farmers. The purposive sampling technique was used among the dairy farmers of Punjab. Four main themes were identified. These factors are human capital, production value, logistics cost, and investments. Traditional

and outdated production mechanisms are the main obstacles to competitiveness in the dairy sector of Pakistan. The major structural changes and technological advancements are crucial for the improvement and growth of this sector. Institutions, particularly in Pakistan, are required to provide formal education, and training to the farmers to boost the competitiveness and ultimately the performance of this sector.

Keywords: Competitiveness; human capital, production value, logistics cost; investment; dairy sector; Pakistan

JEL: M1

Research Background

Pakistan is the world's fourth milk producer in the world and, in 2019, its production was estimated to have expanded further by about 3 percent (FAO, 2020). However, due to the increasing pressure of the economic environment, national and international companies have been facing hard challenges to compete and sustain in the market, especially in Punjab, which is the largest province of Pakistan (Ziad et al., 2019).

* College of Business, University of Buraimi, Oman

** Managerial and Financial Sciences Department, Al Zahra College for Women, Oman

*** College of Business, University of Buraimi, Oman

**** College of Business, University of Buraimi, Oman

***** College of Business, University of Buraimi, Oman

The local dairy products do not supply the products with good quality and quantity. The dairy sector of Pakistan is far lagging compared to the country's other sectors including sugarcane, cotton, and rice (Rehman et al., 2019; Rizwan et al., 2020), and the dairy supply chain shows a lack of improvement in terms of production and modernization (Warriach et al., 2019).

Dairy production is one of the major agricultural sectors of Pakistan. Most of the farms are comprised of small-scale farmers

with 95 percent of Pakistan dairy producers having two to four animals (Ziad et al., 2019). Importantly, the farms with up to 50 animals only represent one-third of the total number of animals, indicating a strongly skewed industry structure (Ajmal et al., 2015). Approximately, 91% of milk is produced in rural areas, with peri-urban areas accounting for 19% now compared to previous corresponding figures of 80% (rural areas), 15% (peri-urban), and 5% (urban areas) (Tahir et al., 2019) as presented in Figure 1.

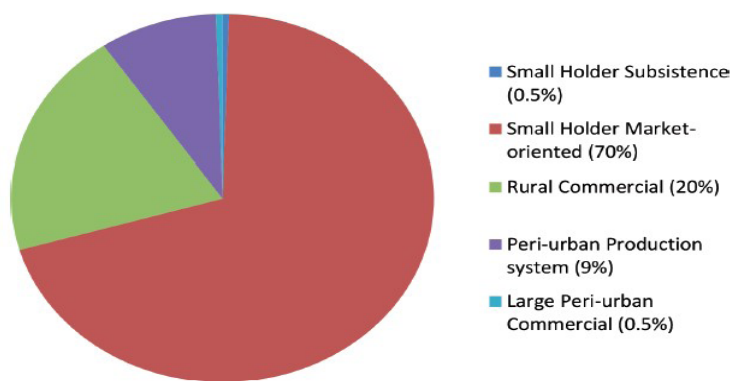


Figure 1. Annual Milk Production System (Source: Tahir et al., (2019))

Despite being one of the highest milk producer countries, Pakistan is still unable to manage an organized supply channel. The lack of value addition in the dairy milk sector, low awareness to improve quality before marketing, inappropriate infrastructure for processing milk, and improper handling of milk products can be said to be a few of the certain causes of the underutilized dairy sector. Some of the major reasons for the low productivity of livestock systems are the inadequate availability of feed and fodder, poor breeding practices, poor management and husbandry practices, high economic losses due to diseases, inadequate marketing,

and financial infrastructures, and unorganized marketing.

For achieving a competitive advantage, within the dairy perspective, it is essential that dairy farms should not only have downstream product differentiation but also that costs and prices should be equally important. Unfortunately, due to the lack of professionalism and inefficient processing of milk, the farms' costs also vary substantially. Along with these, there is severe competition in terms of the sales of dairy products.

A firm's competitiveness can be considered as its ability to perform better than other companies in the same sector (Vladimirov, 2021). For any sector, the analysis

of competitiveness is of profound importance as it provides a base to understand certain factors that can influence individual farms and industries in that sector (Beber et al., 2019; Harrison & Kennedy, 1997). The five primary sources of competitiveness that might affect the firm's performance and market shares are namely technology, attributes of purchase inputs, product differentiation, production economies, and external factors (Porter, 1985). Among the different possible driving factors, technology diffusion, and adoption are considered to be of profound importance (Hunger et al., 2018) as they can play an important role in improving competency and output gains, advancement in working conditions, and cost-efficiency and responsiveness in a continually changing environment (Schwab et al., 2015). Professionalization of human resources, appropriate infrastructure, and policies, approach to the international market, and professional management are some of the other key factors in improving competitiveness (Banterle et al., 2014; Kumar et al., 2018; Viswanadham & Samvedi, 2013). Particularly, in dairy supply chains, connections with the suppliers might be important to consider while dealing with competitiveness (Prakash et al., 2017).

Despite its importance, limited research has been conducted to examine the analysis of competitiveness by looking at the processing stage of the supply chain in the emerging economy context (Beber et al., 2019). Particularly, in the context of Pakistan, few institutes are involved in promoting the dairy sector and developing the socio-economic condition of farmers in this sector (Tahir et al., 2019; Ziad et al., 2019) and for this, there is a dearth of research in the dairy sector. There is also a lack of needs-based applied research

to examine poor monitoring and evaluation procedures and low proficiency among farms (Warriach et al., 2019). The present study was an attempt to explore certain factors that are limiting the competitiveness in the dairy sector of Pakistan and to develop certain management and policy recommendations to boost this sector.

Methods and Data

As the main aim of the present study was to explore certain factors that are limiting the competitiveness in the dairy sector of Pakistan, a qualitative approach was used to achieve this objective and to uncover factors that can influence the competitiveness of dairy farmers. It has been observed that the qualitative approach helps to understand social phenomena, behaviors, and attitudes of people and how they are affected by their surroundings (Ziad et al., 2019). For this purpose, the purposive sampling technique was used among the dairy farmers of Punjab. The research was conducted in the Punjab province of Pakistan, which is a major producer of livestock products. For 6 months (September 2021 - Feb 2022), five districts were selected based on the production and after a discussion with the local government agencies and field logistics and based on the dairy animal population (Warriach et al., 2019). These districts were Sahiwal, Okara, Khanewal, Multan, and Jhang.

In this study, semi-structured interviews were conducted with different stakeholders involved in the dairy sector including fifty farm owners and managers. These farmers and managers were selected based on their milk production range including average, progressive, and commercial farmers respectively. Also, there were five representatives of government institutions

from selected districts, four officials from private companies, and ten representatives of local associations. The information from these different sources helped in the analysis and discussion. To maintain confidentiality, the interviewees were identified in the text with numbers, ranging from ID001 to ID069. Each interview took between 30-45 minutes. The questions were both open and close-ended and mainly included information about their background and demographics, management process, governance mechanism, the influence of market dynamics and external factors, technology adaptation, milk supplies, middleman role, and future expectations and concerns.

The goal of all these questions was to identify primary sources that are affecting directly or indirectly achieving competitiveness in the dairy sector. All the interviews were recorded. For data analysis, all the recordings were transcribed which were later reviewed by an expert as part of the content analysis. From these interviews, four main factors (themes) were identified. The factors are human capital, production value, logistics cost, and investments.

Results and Discussion

Overall, all interviewees agreed that major structural changes are required in the dairy farm to increase competitiveness and improve the production value. The four main themes, which were identified during the interviews have been discussed in this section.

1. Human Capital

One of the major findings in this research is the lack of expertise in the dairy field, which may be the cause of several problems. Most of the respondent farmers were uneducated and were not aware of the modern way for

the crossbreed, to increase milk capacity and medical treatment. Forty farmers were those who believed that the technical staff was not competent and was unable to respond properly. Sometimes the government technical staff even cannot understand the actual symptoms. At times, the farmers need to contact old and experienced farmers to cure their animals. The majority of farms are being run in the old and traditional way. "Due to hard work and with low financial benefits, shortage of labor issues are rising and the farm owners are unable to tackle this problem" (ID051).

• *Strategies*

The farmers try to manage these problems in their own way. Lack of government interests and incompetence are the major issues. The institutions and donor agencies tried to launch a number of the projects but failed due to the lack of coordination among the departments, lack of trained and technical staff, and misuse of funds (Warriach et al., 2019).

To mitigate the labor shortage problems, the usage of advanced machinery is important. For instance, a grass cutter machine is important, only one person is needed to maximize the output from the field to the storage place. The vet experts to deal with the animals are very important and institutions should provide extensive veterinary doctors to look after directly to avoid consultation with non-professionals. The support of institutions is important as the development and implementation of the policies can play a significant role, which has been ignored in the dairy sector specifically in terms of human capital. A study conducted by Beber et al., (2019) in the Brazilian dairy sector argued that costs, quality, and integration of the human capital affect directly the competitiveness in the chain. This factor is crucial because

the whole competitive structure is based on human capital in any business.

2. Production Value

"In Pakistan, milk price is varying and is much more dependent on the bargaining with the middleman" (ID010). Thirty farmers thought that it was difficult to bargain with the middleman because they did not have access to the customers directly. The irony is that the middleman used to be a dagger stabbed in the heart of the dairy sector. Seven interviewees said that it is difficult to set the price according to the quality of the milk. As there is no mechanism to measure the quality at the farm level. "Only a few companies have their collection centers, where farmers can supply milk directly to those centers, and then the company pays them according to the quality" (ID025). "Transportation is another issue, as farmers do not have enough vehicles" (ID035). The statistical data from 2006 to 2016 shows that the main focus of government policies is to increase the number of animals instead of the productivity of the animals (Tahir et al., 2019).

• *Strategies*

The quality parameters cannot be improved without any technical assistance. Multinational companies collect milk based on protein and fat content and make payments accordingly. However local supplies cannot use such parameters. There is a need to set quality measures by the institutions and then set the price according to them. The suppliers are the milkmen and the customers are unable to trust them for price and quality. "These suppliers buy milk at a single price from the farm and then sell it at a different price based on their so-called quality assurance" (ID057).

Production value is an essential aspect of any business. Technology and coordination

with the institutions can increase the production value. The outdated method of collecting milk from animals also creates hygienic problems. Now, the milking machine is everywhere and can be utilized to collect milk conveniently from animals. Government institutions can help to assist with hygienic production at the farm level. Another possible way to increase productivity is crossbreeding. The study of Tahir et al. (2019) also highlighted the same facts and argued that crossbreeding is the most suitable solution for productivity improvement.

3. Logistics costs

Scattered milk farm structures and high transport costs are the main concerns in supplying the milk to the processing plants and customers. Another reason is 'poor infrastructure' (ID010). "Door-to-door supply of milk is our common trend, which is not convenient due to the small volume and it increases the cost as well" (ID024). Many of the farmers do not have transport and thus they cannot supply to the large company's collection centers. Especially, during the rainy season, even milkmen are unable to collect milk from the farms, and all milk waste and loss are directly incurred by the farm owners.

• *Strategies*

Fifteen respondents, including government officials, members of the associations, and local representatives agreed that this particular problem is directly related to the supply chain and thus an improvement in the supply chain is very crucial. "Only the government can solve this problem because the infrastructure of any country is under the control of government institutions" (ID033). The study of Beber et al. (2019) argued that the volume of milk, the situation of the roads, and access to farms are a few of

the certain factors that affect the logistics cost. Farms are dealing with some severe problems. As mentioned earlier, the number of heads is increasing instead of productivity. There should be a focus on high production, which will reduce the milk collection cost. Institutions can directly engage themselves in the collection of milk from the farmers and can supply it to the milk collection centers of the companies. The installation of the solar plant and provision of the chillers can reduce 15% of the wastage of milk in the summer seasons. The solar plant can be the ultimate solution because, in the majority of the areas, the government cannot provide electricity due to a scattered population and poor infrastructure.

4. Investment

Forty-five interviewees agreed that to boost the dairy sector, not only a financial investment but also investment in socio-economic uplift, training and development, product development, and research is vital for building a viable business model. "For us, investment is all about buying animals" (ID021). "Institutions are unable to provide training for the usage of new technology. We do not know about milking machines" (ID050). "I do not have a formal education; it becomes difficult for me to manage my accounts" (ID004). "I depend on a middleman for pricing, whatever he will pay, I have to agree" (ID019).

• Strategies

There is a dearth of research and development in Pakistan's dairy sector. Due to increased awareness through media, people are health conscious now and fresh, hygienic products can get a high market share. This can be a great opportunity for local farmers. They can make their farm fresh butter, ghee, and even yogurt. Also, with solar energy

plants, farmers can have their chillers or cold storage spaces to keep the freshness of the product. Later, they can focus on the branding and packaging of the products as well.

Interviewees from the institutions agreed that there should be some investment in training and development programs, whereby farmers can be trained in the basic business rules including handling the animals, product quality, costing, and budgeting. Not only investment in training and development at the farm level is required but there is a need to have trained staff at the institutional level. The staff needs to get training related to the diagnosis of diseases, vaccinations, and identification of the original breed of the animals. Knowledge management can play an important role in professionalization. According to Chow et al. (2005), knowledge management is the set of activities that enables the creation, storage, distribution, and application of knowledge in an organization. Knowledge management can help to develop organizational capacity and continuous improvement can assist firms to develop mechanisms to know about the complex environment, strengthen the supply chain, and identify early disturbances in the chain.

Conclusions

The findings of the present study highlight that in Pakistan, traditional and outdated production mechanisms are the main obstacles to competitiveness. The major structural changes and technological advancements are crucial for the improvement and growth of farm supplies not only in the local but also in international markets. The aforementioned changes involve technological, highly equipped farms and machinery, also processes, and strong coordination at both farm and institutional

levels through knowledge management are vital. The main purpose should be to increase the productivity, value of the product, and knowledge-sharing environment which can increase competitiveness.

One of the key aspects to increase competitiveness is productivity. Countries like New Zealand and Australia have low annual milk production but still, they have a high market share in the world to export milk (FAO, 2020). In the Punjab dairy sector, there is a need to have high professionalism throughout the chain. Professionalism is required at the farm level, where farmers can use techniques to increase productivity, select quality breed animals for long-term purposes, and focus on the generations of the animals. Farmers can develop their pool of farm owners and can supply their products using their suppliers to the markets. The other important element is training and development and the adaptation of new technology. Training farmers can play a crucial role in farm management and increasing production. Institutions and multinational companies can assist farmers in the development of an efficient supply chain, better farm management, and the use of the latest trends which can help to improve the productivity of farms.

In a country like Pakistan, the lack of education, less awareness about the technology, poor infrastructure, inspection, and control issues have a substantial effect on the competitiveness of the farms' level environment. For the growth of any sector, the government and concerned departments of a country play a significant role. In Pakistan, there is a need for support and coordination from both the public and private sectors to fill the loopholes and increase the yield to make it a profitable entity. The private sector has taken the initiative to implement projects for

milk collection and marketing from farmers (Tahir et al., 2019). Such projects can help to cater to the rapidly increasing demand for milk but institutions are required to provide formal education, and training to the farmers to boost the competitiveness and ultimately the performance of this sector. The present study was an attempt to explore certain factors that affect competitiveness in the dairy sector. There were some limitations to this study. First, a limited number of districts were selected from one state of the country. Also, the sample size was relatively small and there might be issues with the generalizability of the results. Future studies can conduct a quantitative analysis with a large population size to get a deeper insight into these factors. Also, other states can be included to make results more generalizable.

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