

# Chapter 19

## Improving Productivity in Small Cheese Production Enterprises

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### ABSTRACT

*In Peru, the Cajamarca region plays an important role in the dairy sector, which includes micro and small-scale enterprises. Most of these manufacturers fail to comply with the technical standards and good manufacturing practices (GMP), thus losing competitiveness. To improve the manufacturing processes and to increase the productivity of these MSEs, this chapter aims to implement processes. Quality management processes in 33 SMEs were investigated and the data obtained were assessed against the parameters of the Peruvian Technical Standards and GMP for the dairy sector. Based on this analysis, some hygiene-related problems were found during the inspection of milk and cheese, raw materials and finished product warehouses, procedures, infrastructure, energy supply, and equipment. It was found that applying technical standards and manufacturing best practices would significantly improve the productivity of these SMEs.*

### INTRODUCTION

In the Cajamarca region, it is the main milk producer in Peru with an 18.2% share. To this is added, that 93% of milk is produced by small producers who own between 1 and 9 head of cattle. In addition, MSEs collect 8.3% of the milk produced in Cajamarca and use 22% of this milk to make dairy products such as cheese, butter, white delicacies, yogurt, among others (Ministerio de Agricultura y Riego - MINAGRI,

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2017). On the contrary, Cajamarca is considered as the Peruvian department with the highest rate of poverty, and its residents are usually associated with the dairy sector (National Institute of Statistics and Informatics - INEI, 2018). Another important aspect is the low national milk consumption level of 81 kg/inhabitant in comparison with the optimum level of 150 kg/inhabitant (Food and Agriculture Organization of the United Nations - FAO, 2018). Furthermore, the percentage of informal, micro, and small-scale enterprises - MSEs that are active in Cajamarca is close to 88.2% (INEI, 2017). The data regarding the processes that the MSEs follow for the production of cheese and their impact on the productivity and their contribution toward the development of the Peruvian economy are not sufficient. Additionally, the problems identified in deficient cheese production result in a large informal market in the Andean regions, specifically in Cajamarca.

Therefore, this study aims to propose the implementation of the process management methodology to improve the quality of processes in MSEs, which would increase the productivity of the cheese manufacturing companies and will allow them to sell their products in the formal market at a higher price. For this purpose, a sample of 33 companies will be analyzed, where the information will be collected in the place, the results will be evaluated in comparison with the requirements of the Peruvian Technical Standards (PTS) referring to milk and dairy products, as well as the correct execution of Good Manufacturing Practices (GMP) in order to propose a Business Process Management (BPM) model. The results concluded that MSEs cheese manufacturers that offer their products in the informal market have lower productivity and utility than those that offer their products to the formal market.

## **BACKGROUND**

Regarding the development of the productivity of the companies of the dairy sector, the research of Herrera *et al.*, (2017) propose a hybrid methodology of Six Sigma and hierarchical Analytical Processes applied to a company dedicated to the manufacture and distribution of the dairy sector, in which analyzed the basic processes of definition, measurement, analysis, improvement, control. It was concluded that a hybrid approach of the Six Sigma methodologies and hierarchical Analytical Processes allow to organize the company, reduce the defective products and increase the capacity of the process, which is expressed in an increase in productivity that impacts the profitability of the organization.

On the other hand, Kapelko *et al.*, (2017) analyze the situation of the productivity of the dairy sector in a context of crisis. They study the productivity of small and medium enterprises in the dairy sector. For this, the data envelopment analysis is applied to calculate the Malmquist index and its components. As well as the bootstrap approach to statistical inference. It is concluded that the technical setback and the decrease in scale efficiency of dairy companies contribute to the decrease in productivity and that food safety standards do not contribute to this decline. In addition, they argue that currently there are new problems that companies have to face due to volatile markets, demand shocks, consumer preferences and the need for dairy products with higher added value, which causes MSEs to increase costs in technologies and products. To this is added, that the policies of liberation demand that the products guarantee the innocuousness of the foods, information to the consumer and a compulsory adoption of policies of care of the environment, which generates a greater expense.

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