



RESEARCH PAPER

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Value chain analysis of CSU-Piat's dairy center

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Abstract

CSU-Piat's dairy center is a government-owned business which is situated at Cagayan State University, Piat campus. The conduct of this research aimed to analyze the value of the different chain of activities in CSU-Piat's dairy center. This study utilized the descriptive research method using interview method (focus group discussion) in collecting the required data and narrative analysis in analyzing the collected data. The management team of the dairy center was the respondents of the study. From the findings of the study, the researchers conclude that the current 15% net profit margin is a result of the CSU-Piat's dairy center's current primary and support activities. The possibility of increasing its value may be achieved if changes in the primary and support activities will be done. Additionally, if the dairy center management team can make use of its competitive advantages, it can further increase its value, thereby increasing sales and income. Furthermore, the researchers recommend that there should be an electronic sales and inventory system for easy access of financial and production data. However, the expansion of product distribution can be achieved thru linkages and/or partnerships with potential retailers and the establishment of stronger customer relationships through after-sales services should be considered.

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Introduction

Economic development and sustainability are significantly shaped by the agricultural sector, especially in areas where dairy farming is undertaken. Providing communities with economic opportunity and vital sustenance, the dairy business is particularly important to agricultural economies.

Dairy production is experiencing significant growth due to the increasing consumption by numerous households worldwide (Hernandez *et al.*, 2022). According to Ingavale (2012), there is a high expectation for the demand for dairy products to rise quickly in Asian countries, driven by shifting dietary preferences.

Institutions play a significant role in addressing the demand for producing high-quality dairy products. Previous studies have recognized the importance of institutions in the production of high-quality dairy products and the development of sustainable agricultural practices (Volenzo *et al.*, 2021). A roadmap for the dairy business in the Philippines, prepared by the Department of Agriculture, emphasizes practices such as raising the productivity of dairy animals, growing the domestic milk market, and enlisting the private sector (Department of Agriculture, 2022).

Cagayan State University Piat proudly hosts the Dairy Research and Development Center, a niche program on the campus. The center has actively supplied pasteurized milk for the NDA/DepEd Milk Feeding Program in four municipalities in Cagayan for the past two years. Currently, it serves the campus community with its mouthwatering dairy products and sells its products to nearby municipalities in the province.

Despite its achievements, the center still contends with issues specific to the dairy business, including changing consumer tastes, environmental concerns, and market volatility. Sarker and Alam (2021) explore challenges in the global dairy sector, including global population expansion and urbanization affecting rural sectors, climate change effects impacting dairy

production, emerging diseases and safety issues, and waste management strategies (both on- and off-farm). Moreover, the dairy business faces severe labor shortages, disruptions in the supply chain, and high input costs (Feed Strategy, 2022).

These studies highlight the various difficulties that dairy industry organizations encounter. Sustainable dairy production requires adjusting to changing customer demands, environmental concerns, and market dynamics. An evaluation of the firms' internal activities, both primary and support activities, may help in assessing how each of these contributes to attaining the competitive advantages of the firm. This process is referred to as value chain analysis. It helps in identifying which processes and practices make it different from its competitors (Hart, 2023; Stobierski, 2020).

The result of a careful value chain analysis will provide a reliable basis for modifying or improving the current activities being employed in a certain business. It is crucial to determine which of these activities contributes to income generation and which contributes to an increase in costs.

Materials and methods

Research design

This study utilized the descriptive research design specifically the interview method (focus group discussion) using a Key Informant Interview (KII) Guide in collecting the necessary data.

Locale of the study

This study was conducted in CSU-Piat's dairy center, Baung, Piat, Cagayan.

Respondents of the study

The respondents of this study were the management team of the CSU-Piat's dairy center to include the center manager, production and processing staff.

Data gathering instrument

A Key Informant Interview (KII) Guide was developed and modified based on Porter's Value Chain Analysis Model where the value chain activities

–primary and support activities of the CSU-Piat's Dairy Center were determined and defined. The KII was subjected to validity and reliability test outside the locale of the study prior to the conduct of the focus group discussion.

Data gathering procedure

Purposive sampling was employed in this study. The researchers sought the permission of the campus head to conduct the study. Using the KII Guide, the researchers had a focus group discussion with the management team of CSU Piat's dairy center. Each activity in the value chain was carefully described and the problems encountered were identified.

Data analysis

The collected data were analyzed descriptively using narrative analysis.

Results and discussion

CSU-Piat's dairy center's value chain map using porter's value chain model is shown in Fig. 1 and clarify and discuss its components with the following subheadings.

CSU-Piat Dairy Center's primary and support activities

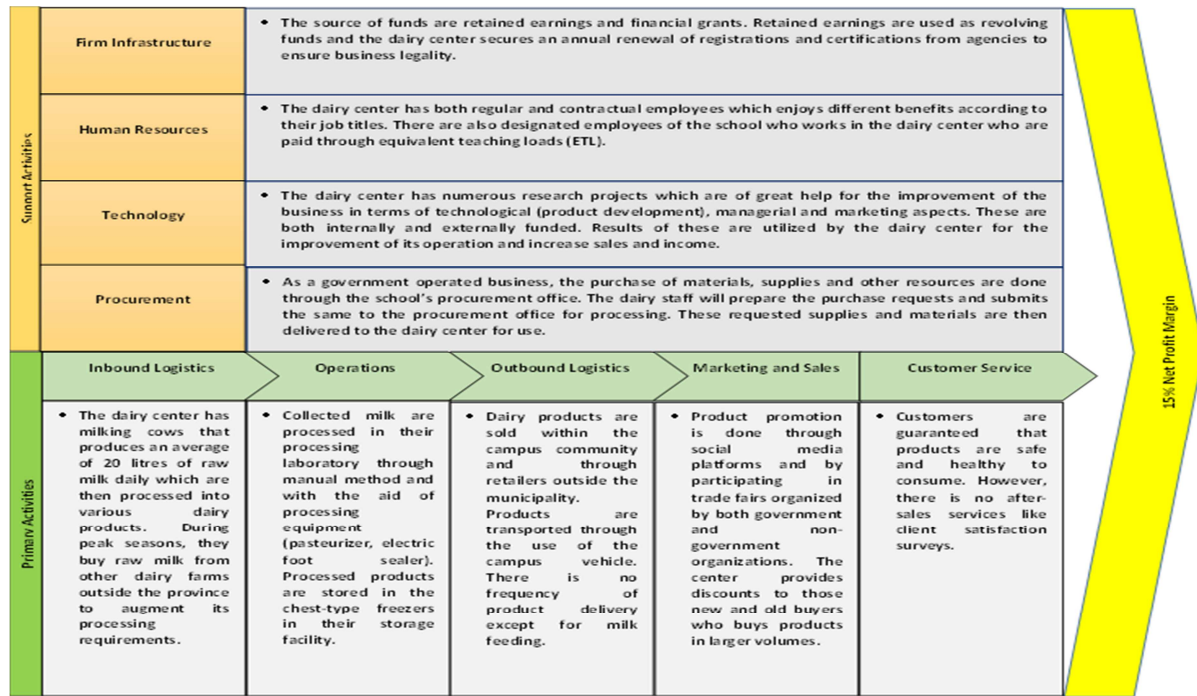
Primary activities

Inbound logistics: The method by which supplies, inventories and raw materials are brought in to a business firm is referred to as inbound logistics (Jenkins, 2020; Hand, 2022). Cagayan State University at Piat has established its dairy center which is currently regarded as its niche program. The dairy center has officially started when the campus was awarded with 25 dairy cows, all Holstein Freisian breeds, by the National Dairy Authority (NDA). Currently, there are holstein freisian breeds and Holstein-sahiwal crossbreeds. These dairy cows were fed with a combination of commercial feeds and silage which were solely prepared at the farm. However, vitamins and medicines for the animals were usually bought at veterinary stores. In terms of facilities, equipment and other materials, these were bought by the institution and some were provided by

other government institutions like the Department of Trade and Industry (DTI) in the form of shared service facility (SSF). On the other hand, the center produces raw milk through its dairy cows but their milk collection is sometimes not enough to supply the demand for milk processing activities especially during milk feeding seasons wherein the center is one of the suppliers of pasteurized milk in nearby public schools. During these times, the center resorts to buying raw milk outside the province in order to meet the current demand.

Operations: Operations are processes that transform an input in output (Chai, 2023). The collection of milk is done through the use of a milking machine which can be operated by one to two persons at the milking parlor facility. This is done on a daily basis and an average of 20 litres of milk per day is being harvested wherein 60 percent will proceed to the processing laboratory and 40 percent will remain in the farm to be fed to calves. Moreover, milk processing is done manually with the aid of some processing equipment like the kitchen-type double boiler pasteurizer, double-jacketed mixing machine, cooking equipment, electric heat stamp foot sealer (for pouched pasteurized milk intended for sale during milk feeding season), freezer and others. In terms of processing laborers, the center commonly needs two persons to process the milk, but during milk feeding seasons, it is required to hire at least five (5) additional production laborers to speed up the processing activity.

Quality control is important in all kinds of business particularly in food business as this will have an effect to consumers' health. The dairy center manager ensures that there is a secure monitoring of production and processing activities. Every year, the dairy staffs are being subjected to medical examinations and there is also an annual inspection conducted by the municipal health officers to ensure the cleanliness and safety of dairy products. Moreover, processed products are properly packaged and labeled before storing in the freezer for easy identification of shelf-life and prevent spoilage.



Note: The 15% net profit margin is based on the dairy center's current net profit margin (data source: CSU-Piat Dairy Center's Financial Statement 2023)

Fig. 1. CSU-Piat's dairy center's value chain map using porter's value chain model

However, the center does not have an electronic record system that aids in the easy access and generation of production and financial data. All transactions and production data are being stored in the computer through manual encoding, and this is usually done by one of the dairy staff.

Outbound logistics: After processing, the dairy products are being stored in a chest-type freezer to prevent it from spoilage. These freezers are placed in the storage facility of the center which is located beside the processing laboratory. Dairy products can be sold at the dairy center and if buyers require product delivery, the campus vehicle is being used for transporting. There is no definite frequency of product delivery to customers because it depends on when they will order but in cases like milk feeding seasons, product delivery is strictly done as per agreed schedule. Further, the issuance of a delivery receipt and an official receipt is always practiced to ensure proper sales accounting.

Marketing and sales: Normally, dairy products are sold to the campus community which is comprised by

employees, students and other stakeholders. There are also retailers but with no established formal agreement yet as to when, how much and how often will they be buying the dairy products from the center. These retailers are from outside the municipality. However, in terms of product promotion, the center makes use of social media platforms and by participating in trade fairs with the assistance of the Department of Trade and Industry (DTI) through the University and Campus Business Affairs Office. To ensure a good customer relationship, the center offers discounts to both old and new customers who buys the products in larger volumes. On the other hand, the dairy staff is responsible in contacting regular and potential customers regarding purchase orders but customers can voluntarily place purchase orders through the center's social media accounts, emails, phone calls or text messages.

Customer service: The dairy center also provides other supports to customers through product guarantees, ensuring that the products have undergone safe processing and contains healthy

ingredients. However, there are no customer satisfaction surveys being conducted which might provide benefits to the business and its clients. The result of the survey can address additional customer demands and will impact sales and income generation of the business.

Support activities

Firm infrastructure: The management, financial and legal systems are discussed in this portion. The dairy center is sourcing-out its funds through income generation and through establishing linkages/partnerships with other government and non-government agencies. These financial assistances are awarded to the dairy center for the purpose of upgrading its current facilities and equipment. The funds generated from retained earnings are used as revolving funds and others are considered as savings. In ensuring the legality of the business operation, the dairy center secures the religious renewal of business permits and other documents like licenses and/or registrations from the government like DTI registration, BIR registration, and License to Operate (LTO) from the FDA. Aside from these, they also secure certifications from the Bureau of Fire Protection (BFP) and Department of Health (DOH) to ensure that the entire business facilities are safe to use.

Human resource management: Human resources are one of the important resources of a certain business because they carry out various tasks. Currently, there are designated resident veterinarian, center manager, production and processing laborers/staff in the dairy center. They hire employees particularly production laborers through recommendations or through accepting job applications while its regular employees are hired by the school head. The employees' salaries vary depending on their job title and these are given on a monthly basis. Aside from salaries, employees are also entitled with an overtime pay especially during milk feeding seasons wherein they are required to work even on weekends. Vacation or sick leave, travel allowances and bonuses are only given to regular employees. Moreover, the dairy center also

provides development programs to its employees in the form of trainings and seminars but there are no rest and recreation or team building activities.

Technology development: Technology development is essential to ensure that the business can jive with the new business trends. The dairy center has numerous research projects which are of great help for the improvement of the business in terms of technological (product development), managerial and marketing aspects. These researches which are both internally and externally funded are related to dairy production and processing as well as marketing. Most of these research results becomes reliable bases and are utilized by the dairy center to improve its product development and marketing strategies. To mention, these research-based technologies has positively impacted the sales and income generation of the business.

Procurement: As a government operated business, the purchase of materials, supplies and other resources are done through the school's procurement office. The dairy staff will prepare the purchase requests and submits the same to the procurement office for processing. These requested supplies and materials are then delivered to the dairy center for use.

Connections between activities in the CSU-Piat Dairy Center's value chain

A careful analysis on the relationship of these different activities in the dairy center's value chain will help increase sales and income through cost reduction. The center might resort to increasing the number of lactating cows or improving the health condition of dairy cows in order to increase their daily milk harvests which will prevent them from outsourcing raw milk from other dairy farms especially during peak seasons. Through this, the center would be able to reduce their cost which is associated with raw milk purchases. Also, to reduce the cost of buying commercial feeds and veterinary medicines, through research and development, the center should conduct researches to come up with viable solutions on how to improve the health of dairy

cows, and eventually increase milk production and finished products. They can tap experts like the resident veterinarian and competent faculty-researchers from the College of Agriculture (both crop and animal science experts) and other colleges to work collaboratively with interdisciplinary researchers.

Additionally, it is mentioned that the center is a recipient of various assistance (financial and technological) from different agencies. The dairy center must focus on the preparation of detailed project proposals for the improvement of the dairy center's operation and submit and present the same to these agencies for possible funding. In terms of operation, the use of improved technologies (latest equipment and processes) may improve the appearance and quality and further increase the volume of finish products.

On the other hand, good management requires easy access and realistic financial data. The dairy center may opt to have an electronic sales and inventory system for easy access and generation of financial data. This is very helpful in assessing the financial health of the business particularly in terms of profitability, aside from the fact that it will save time and effort in record keeping and financial data analysis.

Lastly, human resources and customers should be regarded as the heart of the business. The management might consider the provision of customer satisfaction surveys to understand further the views and opinions, wants and needs of its clients as well as allowing its employees to undergo at least once a year with a rest and recreational activities. This is to ensure that both employees and clients are given due attention.

CSU-Piat Dairy Center's competitive advantage

A business can create its competitive advantage through improving its processes. The CSU-Piat's dairy center may increase its value through collaborating with potential clients by creating linkages in the form

of memorandum of agreement or understanding (MOA/MOU). Say for example, it can establish a steady, larger and ready market for its products. The wider the product distribution, the higher the probability of increased sales and income. Aside from this, it is very helpful for the dairy center to continuously participate in trade fairs organized by both government and non-government institutions to maintain and expand further its product promotion, thus increasing business opportunities.

Moreover, since the dairy center is situated and managed by a public school, it should continuously make use of its competent faculty-researchers in dairy production, processing and marketing to improve and address all issues in every activity or area in the entire value chain. Lastly, the fact that there is only two dairy farm (production and processing) in the province of Cagayan, this will enable the business to catch a larger portion of dairy market provided that it would be able to meet the current and future demand of customers, both in quality and quantity.

Conclusion

From the above findings, the researchers conclude that the current 15% net profit margin is a result of the CSU-Piat's dairy center's current primary and support activities. The possibility of increasing its value may be achieved if changes in the primary and support activities will be done. Further, if the dairy center management team can make use of its competitive advantages, it can further increase its value, thereby increasing sales and income. In relation to the abovementioned findings, the researchers recommends that there should be an electronic sales and inventory system should be created and used for easy access of financial and production data; expansion of product distribution thru linkages and/or partnerships with potential retailers; and establish a stronger customer relationships through more after-sales services.

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