

# Weaknesses in the U.S. dairy supply chain exposed by the COVID-19 pandemic

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# Introduction

- The outbreak of COVID-19 resulted in the lockdown and the closure of many schools, restaurants, bars and other public places
- U.S. dairy farmers dump about 3.7 million gallons of milk every day in April 2020 (1 gallon is about 3.78liter) (Dairy Farmers of America, 2020)
- Research question:
  - I. Identify which parts of the dairy industry supply chain failed, and find out the reasons for the failure and describe the impact
  - II. Suggest how can companies avoid or minimize these risks



*Figure 1. Dairy farms dump milk (independenteagle, 2020)*

# Background

## ➤ **Suspended school lunch program**

“National School Lunch Act”, signed by President Harry Truman in 1946 was forced to suspend.

## ➤ **Fixed production line**

Companies that produce small packages faced three choices:

- I. change the production line to provide large packages suitable for family purchase
- II. reduce production
- III. stop shipping

## ➤ **Special characteristics of milk production**

short shelf life; low temperature refrigeration; sterilization requirements (American ORTEC, 2020)

## ➤ **Labor shortage**

Due to the impact of COVID-19, there is an extreme labor shortage in the dairy industry. Especially in the transportation chain, the labor shortage reached 47% (California Dairy Research Foundation, 2020) .

# Background

## ➤ **National financial support**

- ✓ U.S. \$16 billion would be allocated to farmers and herders affected by COVID-19. A subsidy program for dairy industry:

The total payment would be based on the producer's milk production certificate in the first quarter of calendar year 2020 multiplied by the national price drop in the same quarter. The second part of the payment would be based on the national adjustment of each producer's output in the first quarter.

- ✓ The U.S. government directly purchased \$4 billion worth of agricultural products (fruits, meat, vegetables, milk, etc.) from farms and ranches, putting these agricultural products in food boxes, and then giving them free to food banks, community centers, faith organizations, and non-profit organizations that serve Americans, including the Red Cross (USDA, 2020).

# Methodology

## A.

### ❖ Research object:

Top 10 dairy industry companies in U.S.:

Saputo, Nestlé, Dairy Farmers of America Inc., KRAFT HEINZ, Conagra Brands, LAND O'LAKES INC, GRUPO LALA, GENERAL MILLS INC, Glanbia and Unilever USA

### ❖ Data collection:

- i. The sales of various dairy products companies in the same quarter
- ii. After COVID-19 occurred, did dairy companies make corresponding adjustments to production, such as shutting down, increasing or reducing production, combining with other enterprises, or allowing a certain part of the enterprise to operate independently, take place?
- iii. Company's net profit / Profit conversion rate

## B.

### ❖ Research object:

Nine farmers have business relationships with the top ten dairy manufacturers in U.S. (except Nestlé).

### ❖ Data collection:

- i. Whether the farm has dumped milk following COVID-19, and how much milk was dumped
- ii. Whether there are any barriers to dairy farmers choosing to dump their milk, such as laws, production, or transportation

# Findings and Discussion

- **Change to market demand**

The packaging of dairy products that people need changed; The supply chain could not quickly meet market demand during this period. This is a key point which had a major impact on producers.

- **Inventory accumulation**

The drastic changes in inventory reflect the fluctuations in the supply chains of companies.

Changes in demand - this was a major factor in the inventory accumulation.

- **Changes in the company's business composition**

With the exception of GRUPO LALA, the other nine companies have completed more company acquisition plans during COVID-19 than in 2019 (All data from top 10 U.S. dairy companies' 2019 and 2020 annual report)

# Findings and Discussion

- **Profit margin**

Among these ten companies, the profit margins of 6 companies have fallen, but Saputo, Nestle, Dairy Farmers of America Inc., and Conagra Brands have achieved an increase in their profit margins through a series of adjustments. The main adjustments include acquisitions, reducing the production of products with low market demand and improving the management system.

- **Milk dumping (dumping milk can directly help the farm reduce costs)**

- **Farm energy consumption**

Dumping milk can directly help farms save costs incurred in energy consumption, including high-temperature sterilization, and the subsequent cooling and storage costs of milk.



# Summary

- **The rapid disappearance of target customers for many suppliers caused substantial inventory accumulation**

Restaurants, school, café etc. were forced to close, which in turn affected the product mix of industry sales.

Changes in people's needs cause the loss of the company's target market.

- **Problems due to inflexibility in product production lines emerged**

Companies could not adjust their production mix in a timely and effective manner.

- **The pandemic resulted in labor shortages that resulted in a lack of transportation capacity**

- **The shortage of farm's raw milk processing channels became apparent as a risk**

When certain cooperative enterprises no longer purchase milk from the farm, the farm will face huge difficulties.

# Recommendations and Conclusions

## ❑ Recommendations

- ✓ Reduce milk transportation channels and merging of small farms as much as possible
- ✓ Reduce the complexity of the company's production lines, so that the factory can more effectively switch the company's production when faced with a crisis similar to COVID-19
- ✓ Farms owned by non-dairy production companies should increase their cooperation with different factories.

## ❑ Conclusions

This study discussed supply chain breaks caused by sudden changes in demand and contributes to the further development of the dairy product supply chain. Future research could examine the long-term impacts to demand changes in the dairy industry and the way the supply change has adjusted to the risk of external shocks

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**Thank you!**